FACULTY COMPUTER SCIENCE &
INFORMATION TECHNOLOGY

On-line survey : Women in IT - What their male colleagues think of them

Name : Lim Lih Jen
Matrix No.: WET 0100 063
Supervisor: Assoc. Prof. Dr. Zaitun Abu Bakar
Moderator: Mr. Teh Ying Wah

ABSTRACT

This project documentation is an exercise submitted to the Faculty Computer Science and Information Technology, University of Malaya, as a report for the Final Year Project Level One, WXES3181 and Final Year Project Level Two, WXES3182, which in turn serves as a partial fulfillment for the Bachelor of Information technology degree.

The system proposed is Online Survey System, which will look into the perception of male to their female colleague in IT. The site is providing the online questionnaire to the respondents. This system will show the result of the survey in graphical way such as bar chart.

Online survey System is divided into two sections Administrator Section and Respondent Sections. Basically, Administrator section is about database admin, the back end support and control. Administrator is also provided authority to edit the questionnaires and retrieve the data from database as analysis purpose. The respondents can answer the questionnaires and view the result of the survey.

During the WXES3181, the scope will cover until system design chapter. The next stage is WXES3182, during this stage; the thesis will cover system implementation, system testing and system evaluation and conclusion.

ACKNOWLEDGEMENT

In the process of developing and completing online survey system, many people have been very kind in lending helping hands, giving invaluable advices and encouragement that contributed to the success in the compilation of it.

First of all, I would like to express my greatest appreciation to my supervisor, Assoc.Prof. Dr. Zaitun Abu Bakar, for being so dedicated and patient in giving me advices and consultation at any time. Her encouragement and kindness in helping me throughout the project is deeply appreciated.

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Last but not least, not forgotten also to thank all of my fellow and helpful friends. Every time when I encountered some problems, they are very willing to assist and advise me. Thank for their full supports, advices and helps.

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CHAPTER 1 INTRODUCTION

This chapter gives the description and purpose of the project and the problem to be solved. The significant and the rationale of this project will be discussed here.

1.1 Project Definition

This system is a web based survey application that automates the whole creation and administration on-line feedback form and can let the users to access on it anytime anywhere from the web browser as long as their computers are connected to the Internet. The users also can access to the real time report regarding the survey's result that is being created by on-line interface. There is a lot of benefit of this system is being identified. The benefits are stated below:

- The user will easily to publish, manage and maintain the multiple online survey and feedback forms form the respondents
- The system can display and analysis real time survey in the graphical way and text.
- The system can get the information on the man perspective toward women in IT field in Malaysia in a systematically way..
- The user interface-friendly, reliable and manageability system have considered during the development of this system.

1.2 Project Objective

This project aims to develop a web-based system that time, human resource and material can be saved. The research can concentrate on mare data collection, analysis and publish the report.

The target respondent of this on-line survey system enables the Male IT Professionals all over the Malaysia to respond the questionnaires in the system about their view of the IT Women. This survey takes less time because the questions are published and the answers are collected through the Internet electronically. The paper work is minimized and the system can incorporate features to enable data analysis.

The survey objectives:

- To identify the perception of Men on their Female colleagues in IT field.
- To identify what the position of female in IT field
- Enable the male IT professional to respond to the questionnaire.

The system objectives

- Prepare the statistical report for the regarding the questionnaires that have been asked.
- Able to create, design and build the survey feedback form in paperless environment.
- Provide an easy access, easy retrieve and analyse survey result from the database.
- Provide a nice and interactive user friendly graphical interface to make the survey more attractive

1.3 Project Scope

The boundary of the system has to clarify. This system focuses on the web-based questionnaire. The target respondents are the men working in IT field. They can click, type and select the answers presented in the web pages.

Due to this survey is web- based application that can divide into the database server, web server, administrator and client-side. The database is stored in the database server and the client can access the data access the data through the web server which will interact directly with the database and retrieve the information the is needed. It will cover the following area:

- Anyone can access to the web site to participate in the survey but the main target is male IT Professionals and they can view the statistical report regarding the result.
- Administrator also can send invitations survey to the target audience through the electronic mailing system that is provided.

1.4 System Limitation

The system may not be able to identify the real identity of the respondents although the target respondents are male IT professionals. The respondents may refill the questionnaires. The questionnaires may not cover all the area. This will cause the survey produces a bias and incorrect result. Sometimes, if the respondents are too little, technically the result is not representative.

1.5 PROJECT SCHEDULE

	1	2	3	4	5	6	7	8	9	10++
PHASE I										
Getting briefing from lecturer and propose the topic.										
Identifying objective of the proposed topic.										
Estimate scope and the specific										
Searching information from various sources about the topic given										
Analyzing and research the information.										
Determine system module.										
Design the recommended system.										
Presentation of the proposal.										
Documentation										
PHASE II										
Develop system.										
Documentation.										
Testing and maintaining the designed system.										
Implementation of the system.										
Presentation.										

CHAPTER 2: LITERATURE REVIEW

A literature review serves to gives account on what has been published on by scholars and researchers. Existing literature related to survey and questionnaire in particular, and on-line questionnaire in particular has been developed widely and profoundly.

2.1 Women in IT field

This survey is wanted to know the perception of Men of their female Colleagues in IT field. As we know, the state of women in the field of IT has received increasing attention over the past few years. The recruiting and the retention of he women in the computing sciences has been an area of the study for many years. Lack of women in the computer science has been a long-standing situation. Many factors contribute to women not attempting a career in the computer science:

1. Male are usually mare mechanically oriented. Males are given erector sets; female are given dolls.
2. Most role model are male, including in computer ads
3. Females, with same levels of intelligence and higher grades, perceive themselves to be less intelligent than males perceive themselves. Female have lower self esteem. (Binkend,L.C.,&Moore,D.M.,2002).
4. The perception of masculinity- the commonly hold perception of OT is its "maleness". Even the language of IT is very masculine. Lorma, an IT academic
5. Perception of technical areas not suited to women- the women interviewed reported a general perception that technical areas are not suited to women, even

though this technical knowledge is important for comprehensive understanding of the software development and its management. (Hellens, L.A.V., Nielsen, S.H. & Trauth, E.M., 2001).

Although many researches showed that women are not suitable in IT industry, then what about for them who are already involved in IT industry, how their male colleagues' perception of them in term of their abilities, advantages and strength.

2.2 Surveys and Questionnaire

To develop a web-based survey on the perception of Men on their Female colleagues in IT field, the central theme of this system is surveying on the view of the Men. To make sure that the system is satisfy the user needs, and to facilitate the survey and the questionnaire, the background of the subject should be research in detail. The questionnaires are used as common data collection on the title of the survey. This section presents and reviews three areas: men and women in IT and questionnaire design principles and techniques.

2.2.1 Survey

Survey involves data collection from a large group of people. The data will be process and analysis for the certain purpose.

2.2.1.1 Definition of the survey

A survey is typically being conducted when there is information needed by an individual/organization but the existing data are insufficient according to American

Statistical association. However, survey is not the only strategy to get the information needed. Other strategies are as stated below

Case Study: This is done by collecting detail knowledge about one or small number of the subject of study/cases. This may involve data collection method such as observation, interview, and documentary analysis.

- Experiment: measuring the effects of manipulating one variable on another variable does this. Samples are selected and put into different experimental conditions. The experiment is tested by measuring some variables in comparison with control variables to draw conclusion.

A survey can be distinguished from other strategy by three characteristics. First, information can be collected by asking people in some structure format such as questionnaires. Second, a survey usually is a quantitative method rather than qualitative one that requires standardized information such as to define/ describe variables/ relationship between variables. Third, a sample which is a fraction of the population that is used to gather the information.

2.2.1.2 Survey process

One of the factors whether a survey is successful is the quality of the survey process itself. Generally, the survey process includes the following steps[Creative Research System]

1) Establishment of goals
2) Sample determination
3) Choose of data collection method
4) Questionnaire design

5) Pre-testing questionnaire

6) Data collection

7) Data analysis

In the sample determination above, the target population and a representative sample is out of a sub- group. It is important not to introduce biases the sample selected.

2.2.1.3 Data collection

There are few types of data collection method where each method has advantages and disadvantages that will be discuss in detail.

1.Telephone surveys

Surveying by telephone is the quick way to contact to the potential respondents. The software such as The Survey System can create the complex questionnaires with many logic options. It allows the respondents and the users to skip questions, perform calculation and modify questions based on the answers to the earlier question. It can also check the logical consistency of the answers and can presents questions or answers in a random order. However, this type of interview may costly to be conducted.

2) Personal Interviews

Personal interviews means that the interviewer asks the question faces to face with the interviewee. This type of interview can take place in anywhere: can be outdoor or indoor. Sometimes the survey is made with appointment, sometimes without appointment, with the interviewee.

3) Mail Survey

This survey is among the cheaper methods. This survey only can be conducted if the user has the names and the address of the target respondents but not their contact number. It takes a petty long time because the postal period. However, it allows the interviewee to think carefully before answers all the questionnaires. It may provide more accurate result of the survey.

4) Computer Direct Interviews

There are interviews in which the interviewees enter their own answers directly into a computer. This type of survey can be used in shopping mall, offices and so on.

5) Email Survey

Email survey is very economical and very fast. More people have email than full Internet access. This makes Internet a better choice than web page survey for some population. However, email only can provide a simple questionnaire whereas on-survey can include complex logic. In addition, the interviewer has to know the target respondents' address before the survey can be conducted.

6) Web-based surveys

Web-based surveys are rapidly gaining the popularity. They have major speedy, cost and flexibility advantages but are significant sampling limitations. These limitation make software selection especially extremely important and restrict the group user can study using this technique. The advantages of using this method are stated below:

- On-line survey are extremely fast, a questionnaire posted on a popular web site can gather several thousand responses within a few hours.
- Once the questionnaire has been set up, no more cost involved. Large samples do not cost more than smaller ones.
- Complex questionnaires can be used, skipping logic, randomisations and others features. It is not possible to conduct with paper survey or other types of surveys
- The colourful interface can attract the respondents to answer the questionnaire.

There are two types of computer application have been developed to assist in a survey.

1) Computer Assisted Telephone (CATI) – The interview is conducted over the phone. The interview uses a computer with the application. Questionnaires that are going to be asked appear on the screen and responses to the questions are entered directly into the application as soon as the respondents' reply given

2) Computer Assisted Personal Interview (CAPI) – The interview brings portable computer on the field. Similar to the CATI responses are entered into the application directly.

2.2.1.4 The Survey Process Summary

As discussed above, survey process divides into a number of goals as to obtain a success survey. Overall, there are several factors that depend to a selection of survey method in software development project

- Speed, internet usage, literacy levels
- Sensitive questions

- Video, sound and graphic

A good survey has quality built in the process along the way. A quality survey is often due to the selection of the sample according to the specification, minimization of the researcher's own error, proper construction of questionnaire, proper response and proper analysis of the results either by human/computer

2.2.2 Questionnaire

To maximize the benefit of the questionnaire as a data gathering method, it is important to understand the advantages and disadvantages of the method .

The advantages and the disadvantages of the Questionnaires are showed below:

Advantages:

- The cost lower
- The sample can be larger and more representative
- Use of the standardized data
- Gathering procedure minimizes potential human error
- Greater anonymity result makes the respondent more honest

Disadvantages:

- Non-return introduces non-random bias into survey result.
- The respondents may misunderstand the meaning of the questions.
- In ability to check the validity of the answers.

2.2.2.1 Types of Questions

The basics questions types used on the questionnaire are open-ended questionnaire and close ended questionnaire.

2.2.2.1.1 Open Ended Questionnaire

Open – Ended questionnaires are particularly well suited to the users who want to get the organizational member' option about some aspect of the system, whether product or process. It leaves all possible response options open to the respondents. It is useful in exploratory situation in which when the system analyst is not able to determine precisely what problem plague the current system. Response to the open-question will be used to focus on the cited problem narrowly.

2.2.2.1.2 Close Ended Questionnaire

Close-ended questions are these that limit pr close the response options available to the respondent. It is used when the system analyst is able to list down all the possible responses to the question and when the entire listed questions are mutually exclusive.

2.2.2.1.3 Questionnaire Comparison

There are a few factors we have to determine before what types of questionnaire to choose.

Table 2.1: Comparison of the questionnaire

Category	Open- Ended	Close-Ended
Speed on completion	Slow	Fast
Exploratory Nature	High	Low
Breath and Depth	High	Low
Easy of preparation	Easy	Difficult
Easy of analysis	Difficult	Easy

2.2.2.2 Web-based questionnaire

We considered a several issue when creating web-based questionnaire. The issues are as follow:

- Allow enough white space. Make sure that the display is easy to follow and if the form continues onto several screen, make it easy to scroll to other section of the form
- Allow adequate space for the responses. Web form should permit generous amount of text to be typed into the response space for open-ended questions. There are six-basics types of responses entry that can be incorporated on a web survey form. They are text box, scrolling text box, check box, radio button, drop down and push button
- Make sure the respondents clearly mark their answers – create bipolar questions by having the respondents click on check box or radio button to indicate 'Yes" or 'No' preference or 'True' or False' preference. User can use a drop-down box to list alternatives for closed questions that are not bipolar. User can ensure more

consistent results because the user chooses an appropriate answer from predetermined list.

2.2.2.3 Questionnaire Design

The foundation for a systematic theory of questionnaire design proposed by Labow, and which incorporates Lobow theoretical principles and the subsequent work of Jenkins and Dillmen, This framework does not constitute a theory of questionnaire design, but it does provide a conceptual modal of the process, and a simple, logical structure for approaching the task of the questionnaire design.

The overall framework for questionnaire is shown in Figure 2.1. A pyramid represents it.

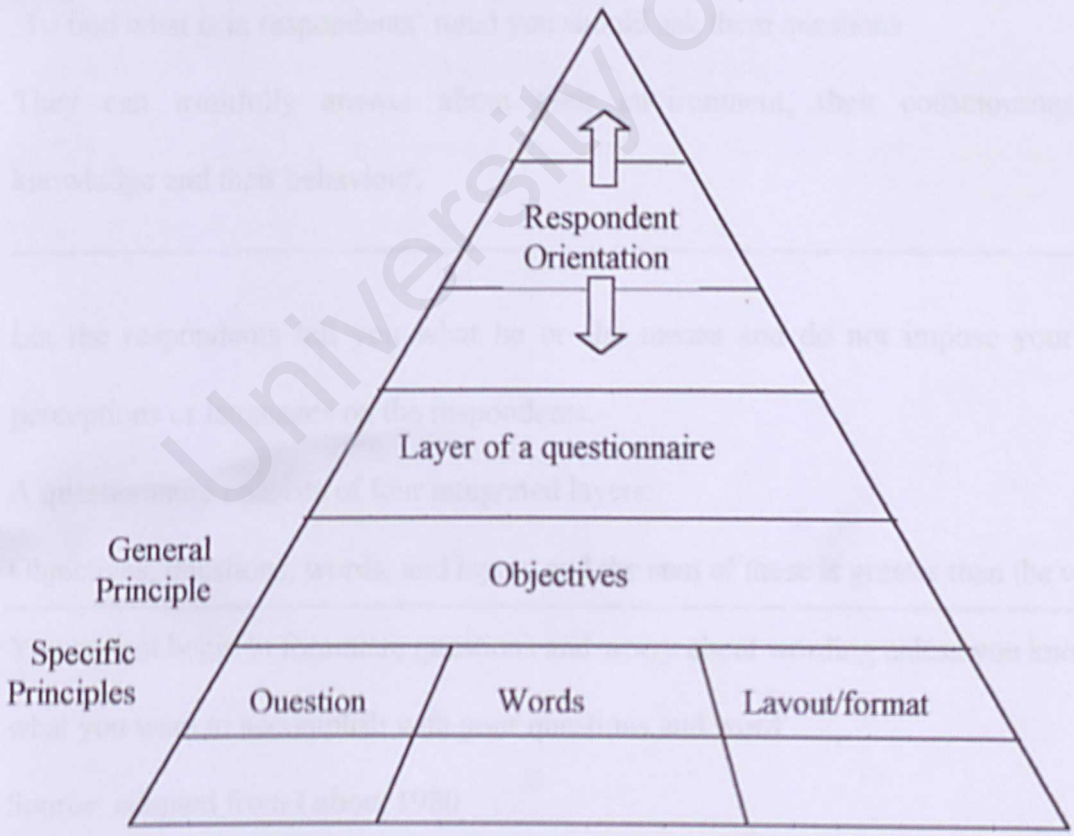


Figure 2.1: A framework for questionnaire

The general principle is at the top of the pyramid and specific principle at the bottom. At the apex of the pyramid is the concept of the respondent orientation and at the base is the specific principle of the question wording and graphic design.

2.2.2.4 General Technique and Principles

The respondents define what you can do:

- The type of questions you can ask
- The types of words you can use
- The concept you can explore
- The methodology you can use

To find what is in respondents' mind you should ask them questions

They can truthfully answer about their environment, their consciousness, their knowledge and their behaviour.

Let the respondents tell you what he or she means and do not impose your values, perceptions or languages on the respondents.

A questionnaire consists of four integrated layers:

Objectives, questions, words, and layout and the sum of these is greater than the whole.

You cannot begin to formulate questions and worry about wording unless you know what you want to accomplish with your questions and word.

Source: adapted from Labow 1980

Figure 2.2: General Principles

2.3 Existing Solution

The Raosoft(EZ Survey), Surveysite and Netcraft (web Survey) are the existing solution being considered during the development of the on-line survey system. However, the frequently used of survey method is manual system.

Manual System

To begin with, we have to identify the targeted respondents. Even though, we manage to identify the targeted user, its coverage widely and not represent because of the limitation of the geographical factor.

To implemental the manual system, we need a lot of manpower, time and money. The manpower is used to do a lot of paper jobs, collect surveys that have been sent and data entry. There is time consuming because the methods used are on house interview and by post. The data that have been collected have to be key in into computer to make the analysis and sometimes the data are analysis manually. Money is used to pay the salary of the worker, posting fees and other administration fees.

RAOSOFT-EZ SURVEY

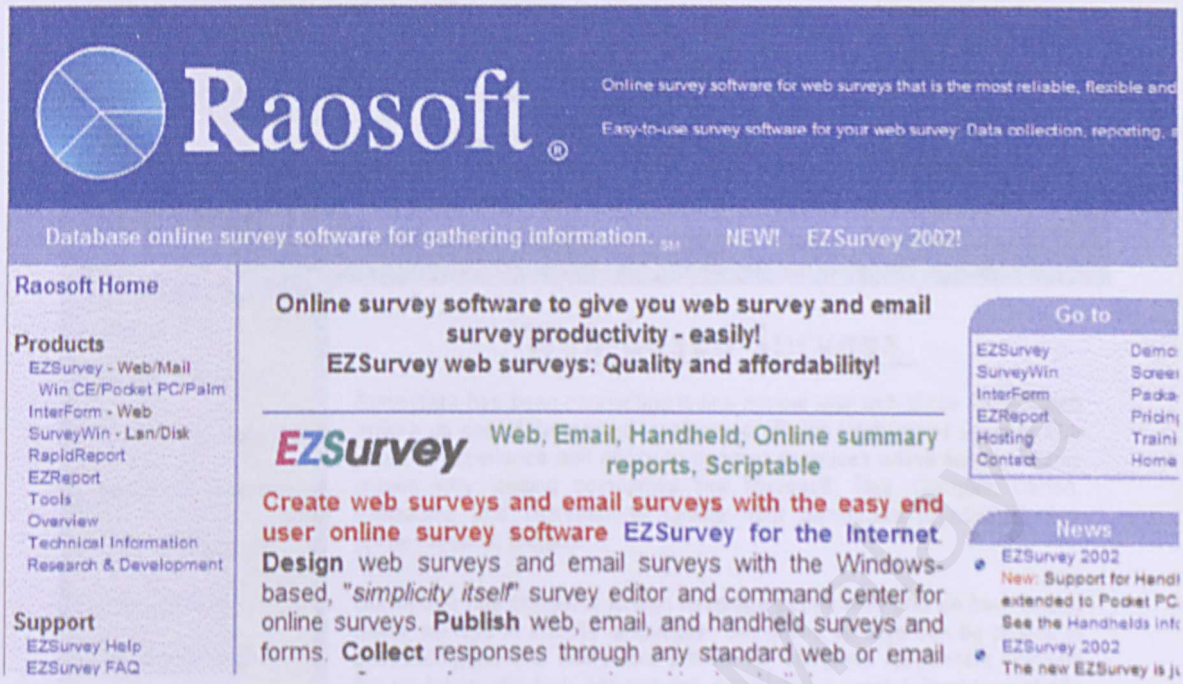


Figure 2.3 Screenshot of Raosoft web page

URL ADDRESS: http://www.raosoft.com

EZ- SURVEY is a powerful and easy authoring program for quick creation of web and email feedback questionnaires. EZ-Survey for Internet is a new 32 bit electronic data collection program that let us build form or questionnaires on a web site or distribute them over the Internet, intranet or using standard email system. System requirement are stated as below.

- Windows: win95/98/me, or Windows NT 4+/2000, 10 MB disk space, 4MB Memory. Database size limited only by system capacity. Network able record lockout, many confidentiality protection options.

SURVEYSITE

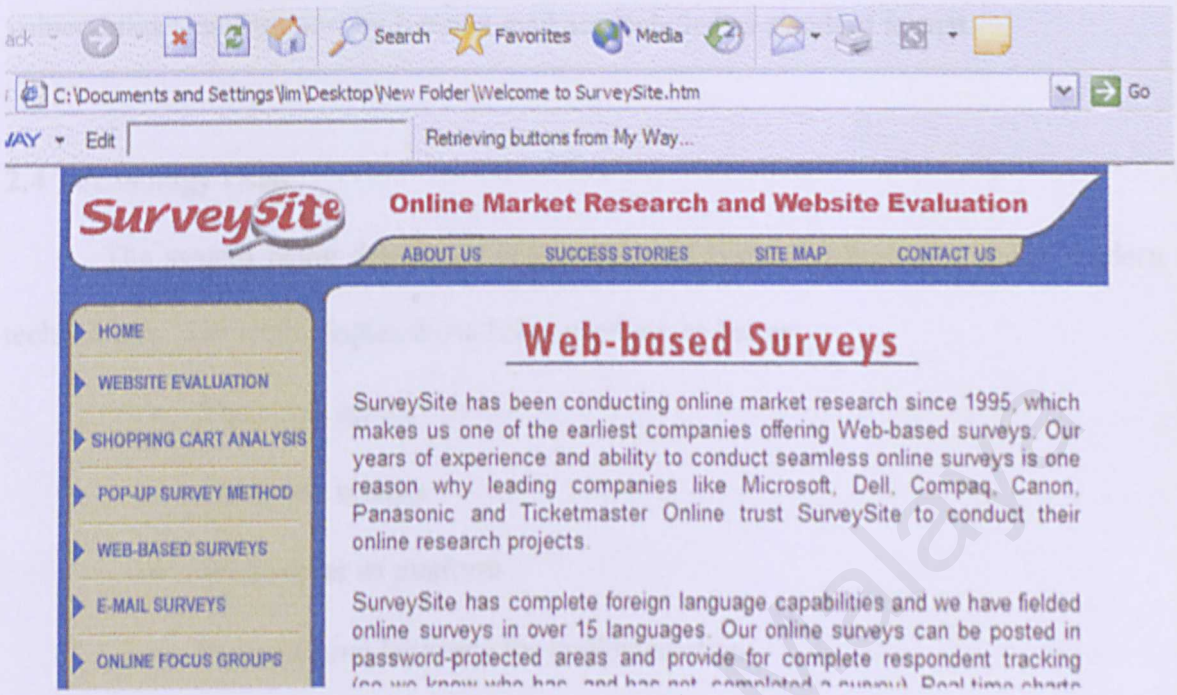


Figure 2.4: Screenshot of Surveysite web page

URL Address: http://www.surveysite.com

Surveysite provides website evaluation by collecting the perception and experience of randomly selection visitor to a web site. Surveysite professionals provide a custom report about the website's strength and areas for improvement. The report include detailed cross tab tables so that they can detect differences among various demographic or usage group. The survey site also provides the practical recommendations to improve visitor satisfaction and increase repeat visit rate.

Netcraft

URL Address: http://www.netcraft.com

This website provides a service which examines a network connected to the internet and report back to user which host are visible and what protocol and service they make available to the internet. It also provides service for vulnerabilities such as

misconfigurations and erroneous software versions. Access to information analysing the vulnerabilities and support by Internet mail are included as standard format.

2.4 Technology Used

The system being developed is a web-based system. It builds on many modern technologies. The technologies those being used are as below:

- The client server
- Operating system
- Web server as platform
- Programming language for implementation
- Database to store and retrieve data

2.4.1 Internet

Internet is a world wide network in which users at any terminal (computer) that are connected to the internet can get the information from and communicate with another user at other computer. First known ARPANET, that was conceived by Advance Research Project Agency (ARPA) of the United States Government in 1969.

The purpose of ARPANET was created a network that allows researches in university to communicate among one another. It allows researchers in universities to communicate each other. Even though, parts of the network were destroyed due to military attack/ other disaster, it still can function because message could be routed in more than one direction. The Internet provides:

- Electronic mail
- UseNet groups
- Instant messaging
- File Transfer protocol

2.4.2 Client server computing

Client server architecture is typically used in world wide web (www) in which web browser acting as client request for a web page from server.. This section will begin from the monolithic system to the current distributed system.

In the beginning, there was mainframes and dumb terminal. Applications are typically run on the mainframes. The application are accessed by the dumb terminal which just provides for data entry and do not have processing power. In this period, software system written are often monolithic in sense that the user interfaces, business logic, data access functionality were all contained in one large application running in the mainframes these monolithic system do not use client side server architecture.

2.4.2.1 Two tier architectures

Two tier software architectures were developed in the 1980s from the file server software architecture design. The two-tier architecture is intended to improve usability by supporting a forms-based, user-friendly interface. The two-tier architecture improves scalability by accommodating up to 100 users (file server architectures only accommodate a dozen users), and improves flexibility by allowing data to be shared, usually within a homogeneous environment. The two-tier architecture requires minimal

operator intervention, and is frequently used in non-complex, non-time critical information processing systems. Detailed readings on two tier architectures can be found in Schussel and Edelstein.

Two tier architectures consist of three components distributed in two layers: client (requester of services) and server (provider of services). The three components are User System Interface (such as session, text input, dialog, and display management services)

1. Processing Management (such as process development, process enactment, process monitoring, and process resource services)
2. Database Management (such as data and file services)

The two-tier design allocates the user system interface exclusively to the client. It places database management on the server and splits the processing management between client and server, creating two layers. Figure 2.3 depicts the two-tier software architecture.

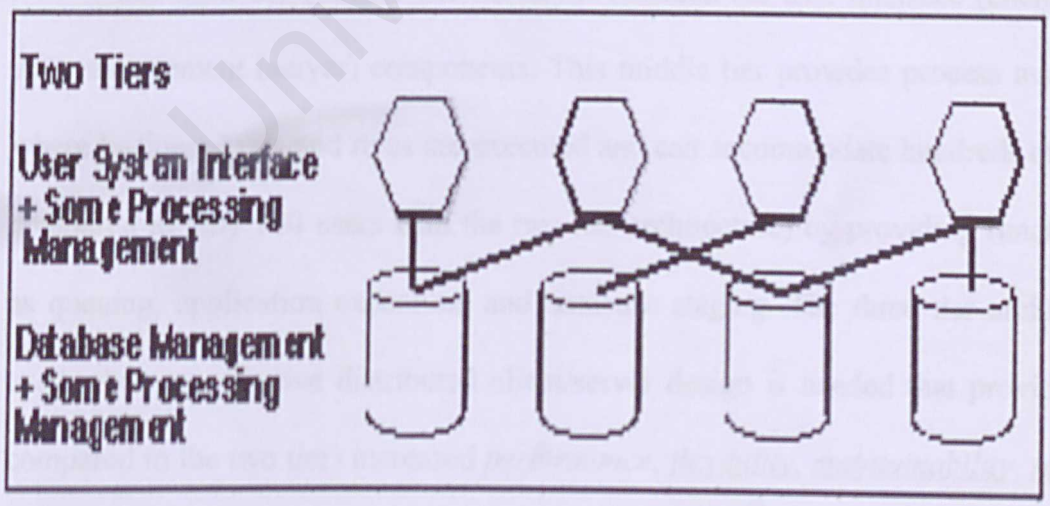


Figure 2.5: Two-Tier Client Server Architecture Design

In general, the user system interface client invokes services from the database management server. In many two-tier designs, most of the application portion of processing is in the client environment. The database management server usually provides the portion of the processing related to accessing data (often implemented in store procedures). Clients commonly communicate with the server through SQL statements or a call-level interface. It should be noted that connectivity between tiers can be dynamically changed depending upon the user's request for data and services.

As compared to the file server software architecture (that also supports distributed systems), the two tier architecture improves flexibility and scalability by allocating the two tiers over the computer network. The two tiers improve usability (compared to the file sever software architecture) because it makes it easier to provide a customized user system interface. (Client/Server Software Architecture – An Overview, 2003)

2.4.2.2 Three Tier architecture

The third tier (middle tier server) is between the user interface (client) and the data management (server) components. This middle tier provides process management where business logic and rules are executed and can accommodate hundreds of users (as compared to only 100 users with the two tier architecture) by providing functions such as queuing, application execution, and database staging. The three tier architecture is used when an effective distributed client/server design is needed that provides (when compared to the two tier) increased *performance*, *flexibility*, *maintainability*, *reusability*, and *scalability*, while hiding the complexity of distributed processing from the user. For detailed information on three tier architectures see Schussel and Eckerson. Schussel

provides a graphical history of the evolution of client/server architectures. The three tier architecture is used when an effective distributed client/server design is needed that provides (when compared to the two tier) increased performance, flexibility, maintainability, reusability, and scalability, while hiding the complexity of distributed processing from the user. These characteristics have made three layer architectures a popular choice for Internet applications and net-centric information systems.

A three tier distributed client/server architecture (as shown in Figure 2.4) includes a user system interface top tier where user services (such as session, text input, dialog, and display management) reside. (Client/Server Software Architecture – An Overview, 2003)

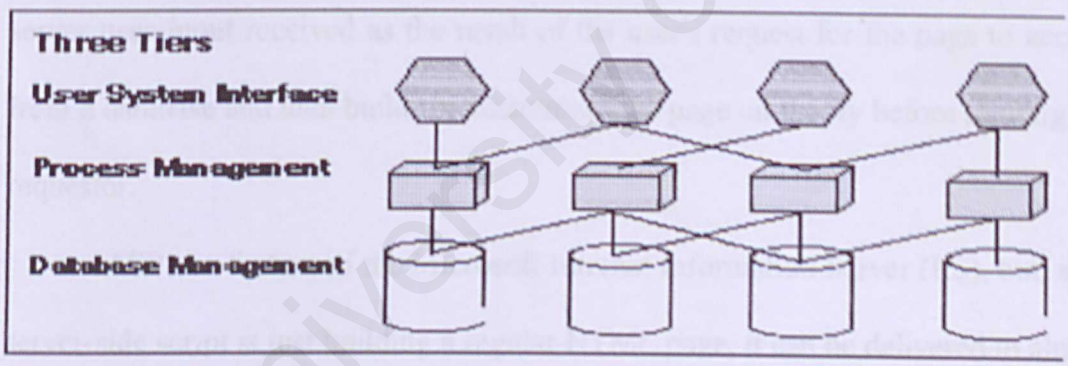


Figure 2.6: Three tier distributed client/server architecture depiction

The third tier provides database management functionality and is dedicated to data and file services that can be optimized without using any proprietary database management system languages. The data management component ensures that the data is consistent throughout the distributed environment through the use of features such as data locking, consistency, and replication. It should be noted that connectivity between

tiers can be dynamically changed depending upon the user's request for data and services.

2.4.3Web Programming Language

There are several web programming language will be discussed in this section.

2.4.3.1 ASP(Active Server Page)

An Active Server Page (ASP) is an HTML page that includes one or more script (small embedded programs) that are processed on a Microsoft Web server before the page is sent to the user. An ASP is somewhat similar to a Server-side include or a common gateway interface (CGI) application in that all involve programs that run on the server, usually tailoring a page for the user. Typically, the script in the Web page at the server uses input received as the result of the user's request for the page to access data from a database and then builds or customizes the page on the fly before sending it to the requestor.

ASP is a feature of the Microsoft Internet Information Server (IIS), but, since the server-side script is just building a regular HTML page, it can be delivered to almost any browser. You can create an ASP file by including a script written in VBScript or JScript in an HTML file or by using ActiveX Data Objects (ADOs) program statements in the HTML file. You name the HTML file with the ".asp" file suffix. The server-side script will result in an easily displayable HTML page. Client-side scripts (for example, with JavaScript) may not work as intended on older browsers.

2.4.3.2 Perl

Practical Extraction and report Language (Perl) is one of the most widely used language for web programming today. Larry Wall began developing this high level programming level in 1987 while working at Unisys. His initial intent was to create a programming language to monitor large software project and generate report. Wall wanted to create a language with rich text processing capabilities and, most of all, a language that would make common programming tasks straightforward and easy. (Deitel,H.M.,Deitel,P.J.&Neito.T.R.,2002)

2.4.3.3 Java Server Page

Java Server Page (JSP) is a technology for controlling the content or appearance of Web pages through the use of servlet, small programs that are specified in the Web page and run on the Web server to modify the Web page before it is sent to the user who requested it. Sun Microsystems, the developer of Java, also refers to the JSP technology as the Servlet application program interface (API). JSP is comparable to Microsoft's Active Server Page (ASP) technology. Whereas a Java Server Page calls a Java program that is executed by the Web server, an Active Server Page contains a script that is interpreted by a script interpreter (such as VBScript or JScript) before the page is sent to the user.

In many way, Java server page look like standard XHTML or XML documents. in fact, JSPs normally include XTML or XML markup. Such markup is know as fixed template data or fixed template text. Note that in most cases, servlet and JSP technologies are interchangeable. As with servlets, JSPs normally execute as part of web

server. The server is referred to as the JSP container.

(Deitel,H.M.,Deitel,P.J.&Neito.T.R.,2002).

2.4.3.4 PHP

PHP, or PHP Hypertext preprocessor is quickly becoming one of the most popular server scripting languages for creating dynamic Web pages. PHP was created in 1994 by Rasmus Ledorf(Who currently works for Linuxcare Inc. as Senior Open-Reseacher) to track users at his web side. It is estimated that over six million domain now use PHP. PHP is an open-source technology that is supported by a large community of uses and developers. Open source software provides developer with access to software' source code and free redistribution rights. PHP is platform independent; implementations exist for all major UNIX, Linux and windows operating system. PHP also provide support for a large number of databases, including MySQL. PHP code embedded directly into XHTML documents. This allows the documents author to write XTML in a clear, concise manner. (Deitel,H.M.,Deitel,P.J.&Neito.T.R.,2002)

2.4.3.5 ASP.NET

ASP.NET combines unprecedented developer productivity with performance, reliability, and deployment.

Developer Productivity

ASP.NET helps you deliver real world Web applications in record time

Easy Programming Model. ASP.NET makes building real world Web applications dramatically easier. ASP.NET server controls enable an HTML-like style of declarative programming that let you build great pages with far less code than with classic ASP.

Flexible Language Options. ASP.NET lets you leverage your current programming language skills. Unlike classic ASP, which supports only interpreted VBScript and JScript, ASP.NET now supports more than 25 .NET languages (including built-in support for VB.NET, C#, and JScript.NET.

Great Tool Support. You can harness the full power of ASP.NET using any text editor -- even Notepad! But Visual Studio .NET adds the productivity of Visual Basic-style development to the Web. Now you can visually design ASP.NET Web.

Rich Class Framework. Application features that used to be hard to implement, or required a 3rd-party component, can now be added in just a few lines of code using the .NET Framework.

Improved Performance and Scalability

ASP.NET lets you use serve more users with the same hardware.

Compiled execution. ASP.NET is much faster than classic ASP, while preserving the "just hit save" update model of ASP.

Rich output caching. ASP.NET output caching can dramatically improve the performance and scalability of your application.

Web-Farm Session State. ASP.NET session state lets you share session data user-specific state values across all machines in your Web farm.

Microsoft .NET Outperforms J2EE. In a head-to-head comparison of performance and scalability between Sun's Java Pet Store J2EE blueprint application and the ASP.NET implementation, Microsoft .NET significantly outperformed J2EE.

Enhanced Reliability

ASP.NET ensures that your application is always available to your users.

Memory Leak, DeadLock and Crash Protection. ASP.NET automatically detects and recovers from errors like deadlocks and memory leaks to ensure your application is always available to your users.

Easy Deployment

ASP.NET takes the pain out of deploying server applications.

"No touch" application deployment. ASP.NET dramatically simplifies installation of your application.

Dynamic update of running application. ASP.NET now lets you update compiled components without restarting the web server.

Easy Migration Path. You don't have to migrate your existing applications to start using ASP.NET.

New Application Models

ASP.NET extend your application's reach to new customers and partners.

XML Web Services. XML Web services allow applications to communicate and share data over the Internet, regardless of operating system or programming language.

Mobile Web Device Support. ASP.NET Mobile Controls let you easily target cell phones, PDAs -- over 80 mobile Web devices -- using ASP.NET.

(Why ASP.NET , 2003)

2.4.4 Client-side scripting

Client side scripting language is a dependent language in which they are cannot create stand-alone application. These languages require a host application in this case web browser, to provide functionality to the scripting language.

2.4.4.1 Java Script

JavaScript is Netscape's cross-platform, object-oriented scripting language. JavaScript is a small, lightweight language; it is not useful as a standalone language, but is designed for easy embedding in other products and applications, such as web browsers. Inside a host environment, JavaScript can be connected to the objects of its environment to provide programmatic control over them.

Core JavaScript contains a core set of objects, such as Array, Date, and Math, and a core set of language elements such as operators, control structures, and statements.

Core JavaScript can be extended for a variety of purposes by supplementing it with additional objects.

JavaScript extends the core language by supplying objects relevant to running JavaScript on a server. For example, server-side extensions allow an application to communicate with a relational database, provide continuity of information from one invocation to another of the application, or perform file manipulations on a server. (Java Script Overview, 2003)

2.4.4.2 Visual Basic Script

Visual Basics (VB Script) is a subset of Microsoft Visual basic used in World wide Web XHTML documents to enhance the functionality of a web page displayed in a web browser. Microsoft's Internet Explorer Web Browser Contains a VBScript scripting engine that executes VB Script Code. VBScript provide s capabilities similar to those of Java script. VB script is particular valuable when used with Microsoft Web Server to crate Active server Pages(ASP)- Technology that allows server-side script of create dynamic content that is sent to the client's browser. Although other scripting language can be used, VB script is the de facto language for asp.

2.4.5 DATABASE

2.4.5.1 MySQL Database

MySQL is also called as My Ess Que Ell. It is the most popular Open Source SQL database. It also is Relational database management system (RDBMS) that can stores data in separate tables rather than putting all the data in one big storeroom.

The MySQL Manual (www.mysql.com/doc) lists numerous features that characterize MySQL. A few important features include:

- Multithreading capabilities that enables the database to perform multiple tasks concurrently, allowing the server to process client request efficiently.
- Support for various programming language (C ,C++, Java, Python, Perl, PHP, Etc)
- Implementations of the My SQL are available for Windows, Linux and Unix
- Full support of functions and operators within the SELECT and WHERE clauses of an SQL query that allow users to manipulate data.
- The ability to access tables from different database by using a single query, increasing the efficiency of retrieving accurate and necessary information.
- The ability to handle large database

For these reason, MySQL is becoming the database of the choice of many businesses, university and individuals. MySQL's rising popularity benefit from the open source software movement. The term open source refers to software that can freely obtained and customized to fulfil corporate, educational or personal requirement. [Note: under certain situations, a commercial license is required for MySQL.

(Deitel,H.M.,Deitel,P.J.&Neito.T.,2002).

2.4.5.2 Microsoft Access

The Microsoft access is one of the easiest ways to create a database. Access provides two different modes. The first is an easy to use menu driven interface that let user issue commands without an in depth understanding of Access. Program mode lets the user to stored instruction in a file such as Visual Basic file and executes them with one command.

Access allow user to indicate how tables should be related to each other. A table that has referential integrity allows only one parent record for each child record. User can add, delete, and rearrange fields in the table structure. User can also control how the data will be entered in a table using the properties sheet of a field. (Sellappan, P., 1999)

Microsoft Access provides a numerous features:

- Build Powerful Business Solutions More Easily and Find Answers Faster
- View, Edit, and Analyze Data in a Browser Window New, interactive Data Access Pages are Access forms and reports designed for the Web.
- Take Advantage of Interface Improvements - The Access 2000 database window makes it easier to work with components of your databases. Use the vertical Objects bar to switch between forms, tables, and reports. (Access Tour, 2003)

2.4.5.3 MS SQL Server 2000

SQL Server 2000 exceeds dependability requirements and provides innovative capabilities that increase employee effectiveness, integrate heterogeneous IT

ecosystems, and maximize capital and operating budgets. SQL Server 2000 provides the enterprise data management platform your organization needs to adapt quickly in a fast-changing environment.

With the lowest implementation and maintenance costs in the industry, SQL Server 2000 delivers rapid return on your data management investment. SQL Server 2000 supports the rapid development of enterprise-class business applications that can give your company a critical competitive advantage.

Benchmarked for scalability, speed, and performance, SQL Server 2000 is a fully enterprise-class database product, providing core support for Extensible Markup Language (XML) and Internet queries.

Easy-to-Use Business Intelligence (BI) Tools

Through rich data analysis and data mining capabilities that integrate with familiar applications such as Microsoft Office, SQL Server 2000 enables you to provide all of your employees with critical, timely business information tailored to their specific information needs. Every copy of SQL Server 2000 ships with a suite of BI services.

Self-Tuning and Management Capabilities

Revolutionary self-tuning and dynamic self-configuring features optimize database performance, while management tools automate standard activities. Graphical tools and wizards simplify setup, database design, and performance monitoring, allowing database administrators to focus on meeting strategic business needs.

Data Management Applications and Services

Unlike its competitors, SQL Server 2000 provides a powerful and comprehensive data management platform. Every software license includes extensive management and development tools, a powerful extraction, transformation, and loading (ETL) tool, business intelligence and analysis services, and new capabilities such as Notification Services. The result is the best overall business value available. (SQL Server 2000 Product Overview, 2003)

2.4.6 Web Server

Web Server is a piece of software that servers request for web pages from browsers using HTTP in a client server-computing model over Internet. The most famous servers are Microsoft's Internet server (IIS) and APACHE.

2.4.6.1 Apache server

The apache web server is available free at www.apache.org, reliably and quietly serves more than 60percent of the currently posted websites. The fact that it is free is only a partial explanation for its popularity. It is available on many platforms in both binary and source code format and earned the reputation of being the most reliable Web server available.

As an open-source web server, the apache server benefits from many contributions from Web developers. They are available in the form of modules and are supported in many commercial distributions. While software is bug-free, bug fixes are rapids in this open-source environment, and the product development cycle is timely.

The server gets a growing number of features from numerous initiatives such as Jakarta, Tomcat, XML-Apache, Java-Apache, mod-perl, Apache: ASP and mod-php.,

2.4.6.2 Microsoft Internet Information server

IIS is the largest web servers available from Microsoft. It is a Web server that enables to publish information on a corporate intranet or on the Internet. IIS transmits information by using the Hypertext Transfer Protocol (HTTP) and it can also be configured to provide File Transfer Protocol (FTP) and gopher services. The FTP service enables users to transfer files to and from the Web site. The gopher service uses a menu-driven protocol for locating documents. The gopher protocol bas been largely superseded by the HTTP protocol. (Schneider G. P. & Perry J. T., 2000)

As the antipode of the Apache product, Microsoft IIS is intended to run on a single platform. (e.g., Intel compatible processors and the Windows NT OS). IIS dominates the NT market segment as an intranet server, winning numerous awards including Editors' Choice from PC Magazines.

The IIS popularity has spurred software developers to create an array of add0ons. Microsoft and is partners offer solutions for a full range of functions for the web platform. Databases access tools, email, security and managing and monitoring tools are relatively easy to finds. While Microsoft optimises the product for its own offerings, sites do use alternatives technologies such as script language and interpreter Practical Extraction and reporting Language (PERL) or Personal Home Pages Tools(PHP) instead of Active Server Pages(ASP) or Java Server Pages(JSP) and Java Instead of Visual Basic, for their integration aspirations.(Chaudlhury,A. & Kuilboer,J-P.,2002)

2.4.7 Database connectivity

2.4.7.1 Open Database Connectivity (ODBC)

ODBC is a standard database access method developed by Microsoft Corporation. The goal of ODBC is to make it possible to access any data from any application, regardless of which database management system (DBMS) is handling the data. (Ashton,H., 1997)

ODBC is based on and closely aligned with The Open Group standard Structured Query Language (SQL) Call-Level Interface. It allows programs to use SQL requests that will access databases without having to know the proprietary interfaces to the databases. ODBC handles the SQL request and converts it into a request the individual database system understands.

ODBC was created by the SQL Access Group and first released in September, 1992. Although Microsoft Windows was the first to provide an ODBC product, versions now exist for UNIX, OS/2, and Macintosh platforms as well.

2.4.7.2 ADO

ADO provides a new and powerful means of accessing data stored in databases. As a single,high-level technology for accessing all types of databases, ADO is simpler and more efficientto use than the two older data access technologies, DAO (Data Access Objects) andRDO (Remote Data Objects). ADO combines the functionality of DAO and RDO into oneinterface and provides even more features. Rather than having to choose DAO or RDO depending on the type of database you need to access, you can use ADO

to access any type of database or file. For example, while DAO can connect to Microsoft Access .MDB databases, ADO can access HTML, plain text,Internet, spreadsheet, and e-mail files, as well as .MDB and other types of databases.

ADO is a language-neutral object model that lets you manipulate data accessed by an underlying OLE DB provider. (An OLE DB provider is a data manager that interfaces directly with a database. For example, Microsoft Jet is the data manager on which Microsoft Access is built.

2.4.7.3 ADO.NET

ADO.NET is rich with plenty of features that are bound to impress even the most skeptical of programmers.Features of ADO.NET are as below:

Performance – there is no doubt that ADO.NET is extremely fast. The actual figures vary depending on who performed the test and which benchmark was being used, but ADO.NET performs much, much faster at the same tasks than its predecessor, ADO.

Optimized SQL Provider – in addition to performing well under general circumstances, ADO.NET includes a SQL Server Data Provider that is highly optimized for interaction with SQL Server.

XML Support (and Reliance) – everything you do in ADO.NET at some point will boil down to the use of XML.

Disconnected Operation Model – the core ADO.NET class, the DataSet, operates in an entirely disconnected fashion. This may be new to some programmers, but it is a remarkably efficient and scalable architecture.

Rich Object Model – the entire ADO.NET architecture is built on a hierarchy of class inheritance and interface implementation.

(ADO.NET Pros and Cons, 2003)

2.4.7.4 Java Database Connectivity (JDBC)

JDBC technology is an API (Application Program Interface) that let user access virtually any tabular data source from the Java programming language. It provides cross-DBMS connectivity to a wide range of SQL databases. The JDBC API allows developers to take advantage of the Java platform's "Write Once, Run Anywhere capabilities for industrial strength, cross-platform applications that require access to enterprise data.

JDBC is modeled on ODBC (Object Database connectivity) but in addition provides an object-oriented model for accessing databases, permitting use of Java methods as well as SQL for querying and updating data. The JDBC standard means that applications can be written without considering what driver will be used in the final deployment, and gives system managers the freedom to change database engines without requiring a change in program logic.

2.4.8 Operating System

An operating system is a program that, after being initially loaded in the computer by a boot system program, manages all other program in a computer. The other programs are called applications or application program. The application programs make use of OS by making requests for the service through a defined application program interface.

2.4.8.1 Windows 2000 Professional

Windows 2000 Professional is the Windows operating system for business desktop and laptop systems. It is used to run software applications, connect to Internet and intranet sites, and access files, printers, and network resources.

Built on Windows NT® technology and the easy-to-use, familiar Windows® 98 user interface, Windows 2000 Professional gives business users increased flexibility. The integrated Web capabilities let you connect to the Internet from anywhere, at anytime—giving your company access to host of flexible, cost-effective communications options. In addition, broad peripheral and mobile computer support make Windows 2000 Professional an ideal operating system for a workforce that increasingly relies on notebook computers. Further, your support and administrative staff will particularly appreciate the reliability and manageability enhancements that make desktop management simpler and more efficient. Windows 2000 Professional lets you:

- **Work how and where you want** with new peripheral support and features that extend notebook capabilities.
- **Rely on your PC** to be up and running with enterprise level quality.

- **Work the way you did with Windows 98, only much faster.** Combine the ease of Windows 98 with the manageability, reliability, and security of Windows NT, at speeds 30 percent faster than Windows 98 on PCs with 64 MB of RAM or more.
- **Communicate, share information, and use the Internet quickly and easily.** With integrated support for Internet-enabled applications, business software developers incorporate the new ways to create and share information made possible by the Internet. (Microsoft Windows 2000 Professional Overview, 2003)

2.4.8.2 Microsoft Windows 2000 Server

Microsoft Windows 2000 Server is the multipurpose network operating system for businesses of all sizes. Windows 2000 Server lets you:

- Share files and printers reliably and securely.
- Choose from thousands of business applications compatible to run today on Windows 2000 Server.
- Build Web applications and connect to the Internet.

This combination and flexibility delivers a strong business value proposition for today's IT customer.

"*The immediate return on investment and the way Windows 2000 Server maps to our long-term goals makes it a perfect fit for our business. The upgrade was so easy—it only took several weeks—we're anxious to roll it out and use it throughout our service*

offerings."—Mike Connor, Senior Vice President, Brokerage Services Group, Automatic Data Processing (ADP). (Microsoft 2000 Server Overview, 2003)

2.4.8.3 Microsoft XP Professional

The Microsoft XP Professional is a newest Microsoft's product. It include many features

Business-Level Reliability

Windows XP delivers a new level of stability, so you can focus on your work. For example, in most cases, if one program crashes, your computer will keep running

Advanced Performance

Windows XP manages system resources efficiently, meeting the performance standards set by Windows 2000 and exceeding those set by Windows 98 Second Edition.

Remote Desktop

Remote Desktop allows you to create a virtual session and use your desktop computer from another computer running Windows 95 or later, giving you access to all of your data and applications even when you're not in your office

New Task-based Visual Design

Get to your most commonly used tasks quickly, thanks to a cleaner design and new visual cues.

Wireless 802.1x Networking Support

Wireless 802.1x Networking Support provides support for secured access, as well as performance improvements for wireless networks.

Encrypting File System

Encrypting File System provides a high level of protection from hackers and data theft by transparently encrypting files with a randomly generated key.

System Restore

If something goes wrong with your computer, you can revert the system to a previous state. (Microsoft Windows XP Professional Overview, 2003)

2.4.8.4 Microsoft NT

Windows NT is a Microsoft Windows personal computer operating system designed for the users and business needing advanced capability. NT's technology is the base for the Microsoft successor Os, Windows 2000; Windows NT actually has two products

- Microsoft NT workstation
- Microsoft NT server

The workstation is designed for users, especially business who need faster performance. The server is designed to business machines that need to provide services for business machines that need to provide services for network-attached computer. The server is required, together with an Internet server such as Microsoft Internet Information Server (IIS), for a windows system that need plans to serve web pages.

2.4.8.5 Linux

Linux is an operating system that was initially created as a hobby by a young student, Linus Torvalds, at the University of Helsinki in Finland. Linus had an interest in

Minix, a small UNIX system, and decided to develop a system that exceeded the Minix standards. He began his work in 1991 when he released version 0.02 and worked steadily until 1994 when version 1.0 of the Linux Kernel was released. The current full-featured version is 2.4 (released January 2001) and development continues.

Linux is developed under the GNU General Public License and its source code is freely available to everyone. This however, doesn't mean that Linux and its assorted distributions are free -- companies and developers may charge money for it as long as the source code remains available. Linux may be used for a wide variety of purposes including networking, software development, and as an end-user platform. Linux is often considered an excellent, low-cost alternative to other more expensive operating systems.

Due to the very nature of Linux's functionality and availability, it has become quite popular worldwide and a vast number of software programmers have taken Linux's source code and adapted it to meet their individual needs. (What is Linux , 2003)

In addition Linux has the following features:

- It is capable of multitasking.
- Has support for Netware clients and servers.
- Includes a LAN Manager/Windows Native (SMB) client and server.
- It multi-platform, that is it can run on any processor.
- Many networking protocols supported.
- Has memory protection between processes ensuring that a program cannot crash the entire system.

2.4.9 Web Browser

The desktop market is currently dominated by two browsers and supplemented by a number a marginal product. Internet Explorer's extended features and its closer integration with operating system have accelerated the dominance of Microsoft.

2.4.9.1 Internet Explorer

- Completely integrated into desktop (especially with Windows 98)
- Desktop wallpaper has turned into "active desktop" that can host miniature web pages
- Internet related tasks are meshed into the Start menu and Microsoft applications
- HTML authoring is done via separate software package (FrontPage) so necessary to buy and learn another interface
- Ability to choose which e-mail and news editor/reader to use
- Preferences are aplenty, but not as customisable as Navigator
- Only supports a handful of platforms (Windows 95 & NT, Macintosh, and UNIX)
- Uninstall feature is extremely difficult for the novice user to find and use adequately
- Relatively stable (many reports scattered throughout the internet say that it has caused hard drive failures)

2.4.9.2 Netscape Navigator

- Transformed from a simple viewing tool to the client side of an enterprise-wide, cross-platform architecture for exchanging information both within a company and outside
- Communicator Pro includes a group-calendar application
- Java based terminal emulator
- HTML authoring is done via an integrated tool in Communicator (Composer) so no need to buy and learn another interface
- Default e-mail and news editor is Messenger and cannot be changed
- Preferences for customization are much more advanced from choosing font size and type to cache size
- Support for over 15 platforms
- Uninstall feature is simple and thorough
- Very stable

They are both very good browser. Their major differences are Explorer has many compatibility issues with Java, JavaScript, and HTML, while Navigator tries to stay current with the industry standards in most cases.

2.5 Developing Model

2.5.1 UML

UML defines twelve types of diagrams, divided into three categories: Four diagram types represent static application structure; five represent different aspects of dynamic behavior; and three represent ways you can organize and manage your application modules.

Structural Diagrams include the Class Diagram, Object Diagram, Component Diagram, and Deployment Diagram.

Behavior Diagrams include the Use Case Diagram (used by some methodologies during requirements gathering); Sequence Diagram, Activity Diagram, Collaboration Diagram, and Statechart Diagram.

Model Management Diagrams include Packages, Subsystems, and Models. Two features add to the expressiveness of UML. Object Constraint Language (OCL) has been part of UML since its beginning, while the Action Semantics extension is a recent addition:

Object Constraint Language lets you express conditions on an invocation in a formally defined way. You can specify invariants, preconditions, post conditions, whether an object reference is allowed to be null, and some other restrictions using OCL. As you might expect, the MDA relies on OCL to add a necessary level of detail to PIMs and PSMs. (Introduction To OMG's Unified Modeling Language, 2003)

Action Semantics UML Extensions let you express actions as UML objects. An Action object may take a set of inputs and transform it into a set of outputs (although one or both sets may be empty), or may change the state of the system, or both. Actions may be chained, with one Action's outputs being another Action's inputs. Actions are assumed to occur independently - that is, there is infinite concurrency in the system, unless you chain them or specify this in another way. This concurrency model is a natural fit to the distributed execution environment of modern enterprise and Internet applications.

2.5.2 Waterfall Model

The waterfall model describes a development method that is linear and sequential. Waterfall development has distinct goals for each phase of development. Imagine a waterfall on the cliff of a steep mountain. Once the water has flowed over the edge of the cliff and has begun its journey down the side of the mountain, it cannot turn back. It is the same with waterfall development. Once a phase of development is completed, the development proceeds to the next phase and there is no turning back.

The advantage of waterfall development is that it allows for departmentalization and managerial control. A schedule can be set with deadlines for each stage of development and a product can proceed through the development process like a car in a carwash, and theoretically, be delivered on time. Development moves from concept, through design, implementation, testing, installation, troubleshooting, and ends up at operation and maintenance. Each phase of development proceeds in strict order, without any overlapping or iterative steps.

The disadvantage of waterfall development is that it does not allow for much reflection or revision. Once an application is in the testing stage, it is very difficult to go back and change something that was not well thought out in the concept stage.

2.5.3 Prototyping Model

The prototyping model is a systems development method (SDM) in which a prototype (an early approximation of a final system or product) is built, tested, and then reworked as necessary until an acceptable prototype is finally achieved from which the complete system or product can now be developed. This model works best in scenarios

where not all of the project requirements are known in detail ahead of time. It is an iterative, trial-and-error process that takes place between the developers and the users.

There are several steps in the Prototyping Model:

1. The new system requirements are defined in as much detail as possible. This usually involves interviewing a number of users representing all the departments or aspects of the existing system.
2. A preliminary design is created for the new system.
3. A first prototype of the new system is constructed from the preliminary design. This is usually a scaled-down system, and represents an approximation of the characteristics of the final product.
4. The users thoroughly evaluate the first prototype, noting its strengths and weaknesses, what needs to be added, and what should to be removed. The developer collects and analyzes the remarks from the users.
5. The first prototype is modified, based on the comments supplied by the users, and a second prototype of the new system is constructed.
6. The second prototype is evaluated in the same manner, as was the first prototype.
7. The preceding steps are iterated as many times as necessary, until the users are satisfied that the prototype represents the final product desired.
8. The final system is constructed, based on the final prototype.
9. The final system is thoroughly evaluated and tested. Routine maintenance is carried out on a continuing basis to prevent large-scale failures and to minimize downtime. (Prototyping model, 2003)

2.6 Chapter Summary

In this chapter, there are three important aspect have been discussed:

- Review on survey, questionnaire, and the perception of men on their female colleagues.
- The exiting solution and system.
- Technologies that make a web application possible.

CHAPTER 3: METHODOLOGY

3.1 Project Methodology

It is an important to have a good procedure of design process before start doing any software development project. Effective development of a project depends on thoroughly systematic planning progress of the project. Thus, a plan must be drawn up to guide the development towards the project goals.

System or software development generally takes the form of life cycle. This life cycle refer as the system development life cycle (SDLC). All system goes through the same generic stages in their lifetime. The stages are:

- Feasibility study
- Analysis and requirement specification
- Design
- Implementation
- Maintenance

(Sommerville, I., 2001)

3.1.1 Waterfall Model With Prototyping

In the development of this online survey system, the standard Waterfall Model with prototyping is used. It provides a means of making the development process more visible.

The Waterfall model with Prototyping is chosen because it can combine the advantages of these two models in a single project to provide a better solution.

In the development of the project, the Waterfall Model will serve as the base for the whole development because the steps of it is very similar to the generic' steps of software development process that are applicable to all software engineering paradigms. It also provides a template into which methods for analysis, design, coding, testing and maintenance can be placed.

Prototyping is involved in the early stages of the development where there was a high degree of uncertainty in several areas of user requirements. The emphasis of prototyping is on trying out and experimenting with ideas and experiment with user interface requirements and usability factors as well as providing assumptions about requirements. It is not on system completeness but a quick design occurring. Besides, it is not feasible for developers to journey through the entire Waterfall model to make enhancement.

(Pfleeger, S. L., 2001)

Below are stages involved in Waterfall model with prototyping:

Step 1: Requirements

The system's services, constraints and goals are established by consultation with system users. Both users and development staff then define them in a manner, which is understandable.

Step 2: Design

The system design process partitions the requirements to either hardware or software systems. It establishes an overall system architecture. Software design involves representing the software system function in a form into one or more executable program.

Step 3: Coding

During this stage, the software design is realized as a set of programs or program units. Unit testing on involves verifying that each unit meets its specification.

Step 4: Testing

The individual program units or programs are integrated and tested as a complete system to ensure that the software requirements have been met. After Testing, the software system is delivered on the consumer.

Step 5: Operation

Normally this is the longest life cycle phase. The system is installed and put into practical use. Maintenance involves correcting errors which were not discovered in early stages of the life cycle, improving the implementation of system units and enhancing the system' s services as new requirements are discovered.

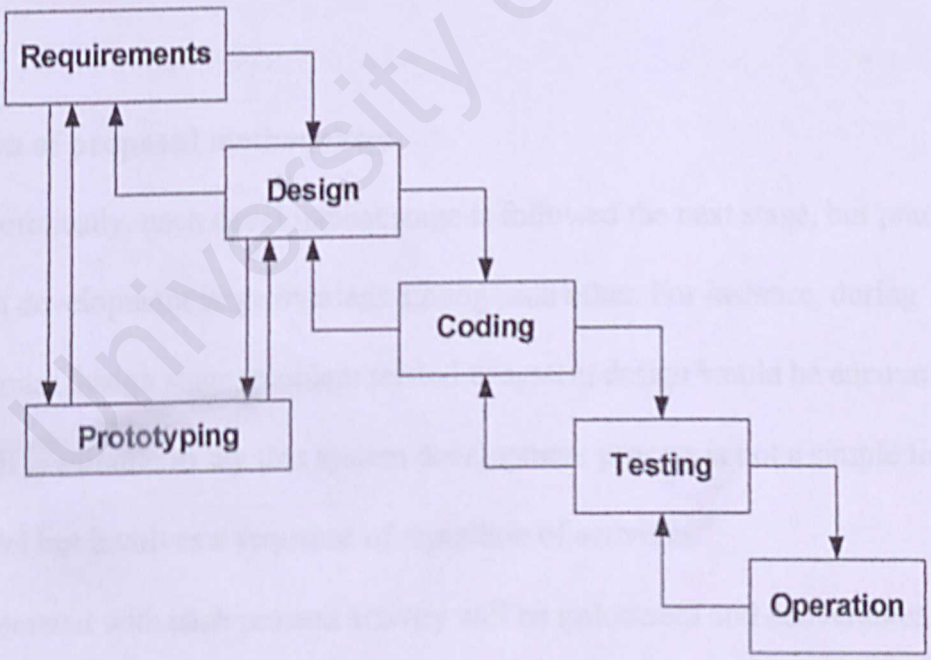


Figure 3.1: Waterfall Model with Prototyping

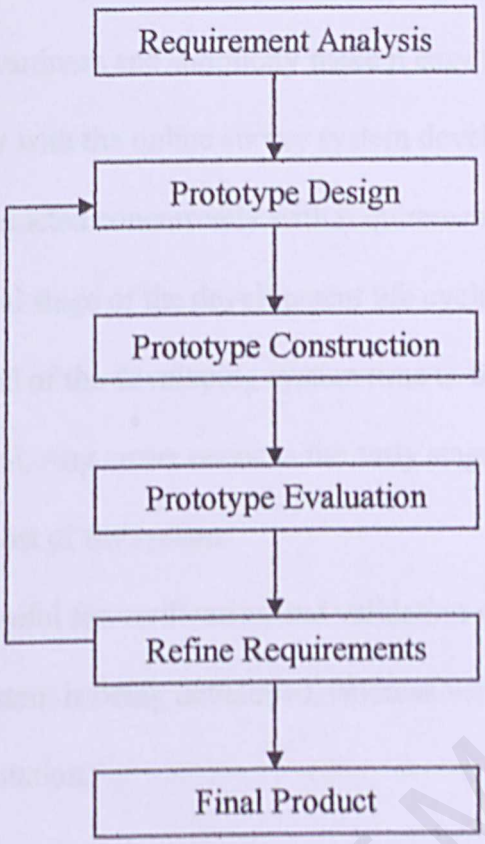


Figure 3.2: Prototyping Model

Justification of proposed methodology

- Theoretically, each development stage is followed the next stage, but practically, each development stage overlaps among each other. For instance, during program design stage, problem related to system design would be encountered. So, it is suitable to say that system development process is not a simple linear model but involves a sequence of repetition of activities.
- Associated with each process activity will be milestones and deliverables, so that I can use the model to estimate how does the project is to completion at a given point in time.

- This model is also help me layout what the system needs to do in an order way. Its strength forwardness and simplicity make it easy to explain to other who is may not familiar with the online survey system development.
- Prototyping conducted concurrently with requirement analysis and definition stage in the initial stage of the development life cycle. Effectively help in ensuring the need of the developing system time to time that is always meets its definition of need. Any errors occur in the early stage will corrected at once. It can reduce the cost of the system
- Prototyping is useful for verification and validation where validation makes sure that the right system is being developed, whereas verification check the quality od the implementation.

3.2 Information Gathering Technique

In the process of gathering information regarding system to be developed, several techniques have been used.

- **Brainstorming**

  Discussion among friends, study some information related to the project and have creative thinking can be helpful as providers of information about recent trends and latest technology. Furthermore we can have a research in more specialized sources.

- **Internet Surfing**

  Internet is the main resource to search for the information and a useful source of reference whenever any ambiguities arise during the entire development period. The latest trends of technology and development skills are available

online. Internet is the cheapest, fastest and easiest way of information gathering.

- **Library and Bookshop**

  A lot of materials in the library such as journal, conference and reference books offer a relatively concise information and format for research. Meanwhile reference books in bookshop also useful in literature review as it do offer a good starting point intended for teaching and from which to find more detailed sources.

- **Research Review**

  In order to get a full understanding of the current situation on how the system actually work, a review on the current systems have been done.

- **Interview**

  An information-gathering interview is a directed conversation with a specific purpose that uses a question and experienced users and expected user have been carried out. It helps in the understanding of the users requirement and users' expectation of the system.

- **Discussion**

  Several discussions have been carried out with the supervisor regarding the project details. Discussion with supervisor is important in order to fulfill the project requirements and get her opinion to make a further enhancement. Whereas discuss with friends can make me look the matter in the different angles. This helps to avoid the blind spots of certain issues.

3.3 Chapter Summary

This chapter discusses about the way the Waterfall model with Standard Prototyping methodology is being used. Besides discuss the project methodology, the method on how to gathering the information also being discussed

On the next chapter, the analysis of the system technique and software development tools in developing this Online Survey will be discussed

CHAPTER 4 SYSTEM ANALYSIS

Why is it important? System analysis is an essential and important phase in software life cycle that is used to determine and clearly to find out what a system does and to analyze the system needs. (Kendall, K.E. and Kendall, J.E. 1999)

4.1 Requirement Analysis

The systems requirements need to be drawn out before develop a system. A requirement is a feature of the system or a description of the system is capable of doing in order to fulfill the system purpose.There are two types of requirement, which is as followed:

- Functional requirement
- Non-functional requirement

(Pfleege,L.S.,2000)

4.1.1 Functional Requirements

Functional requirement describe iteration between the system and its environment. These depend on the type of software which is being developed, the expected users of the software and the type of system which is being developed when expressed as user requirement, they are usually described in a fairly general way but functional requirement describe the system functional in details, its inputs and outputs, exceptions.

Administrator Section

a) Database Maintenance module

This module allows the administrator to manipulate all the records in the database. The administrator can create, delete and update any data in the system.

b) Mailing Module

This module allows the administrator allows keeping contact with all the users. Administrator can make any announcement to the users through their module.

c) Login Module

For security purpose, administrator has to login with the root password before they can assess to the database.

d) Add/delete Module

The existing administrator can add more authorized person to in charge in this system or remove the addition person from this system.

e) Change Password/ username

After login to the system, the administrator can change their root username and password

User Section

a) Survey Module

This module provides survey question. The question will be placed in this module and the user/respondents can vote it

b) Report Generate Module

This module is used to summarize the result of the survey of the questionnaires. It will do the statistic calculating on the answered questions and the result can be

viewed in chart mod for a clearly analysis. This module will only available on the multiple-choice questions.

c) Mailing module

Respondents can use this function to send email invitation to the friend to vote for this survey.

d) Comment Module

The respondent also can send the feedback to the administrator

4.1.2 Non-functional requirement

A non-functional requirement is a description of other features, characteristics and constraints that define a satisfactory system Below are the non-functional requirements of the system:

i. Maintainability

Maintainability is the degree to which the system can be cost-effectively made to perform its functions in a possibly changing operating environment. The system are easy to modify and test in updating process to meet the new request, correcting errors, or move to a different computer system.

ii. Reliability

The application system, software and hardware shall be reliable and avoid unnecessary and unplanned downtime of overall environments. The system shall be secured from unauthorized access. All data shall be kept away from unauthorized user.

iii. Scalability

The scalability is to promise the capability of the system to migrate as a client or server to machines of the greater or lesser power, depending upon requirement, with little change to the underlying components. The solution can be scaled using hardware or application configuration or a combination of them. The system can process up to 1000 transactions per second. Capacity of the system can be accommodated up to 1000 users and respondents at a time

iv Compatibility

The system should work under both Internet Explorer and Netscape Navigator.

v. Response Time and Performance

The system response time should between 1 to 5 second

vi Accuracy.

Two decimal digit are used in displaying a statistical results.

vii User friendliness

The design of the system of the system and its interface should be friendly and easily understand. Generally, the design of the interfaces should confirm to the following criteria

- Easy to use – no training required for respondent
- Instruction – easy to follow the instructions, which are always available.
- Language – non-technical users should understand language used in the system unambiguously. Wherever the use of jargon is necessary, the term shall be explained to the users.

- Navigation – Navigation shall be fast and easy. A global navigation bar shall exist an all the screens. Navigation from one place to another in the system should take a minimal and reasonable number of links

4.2 Run Time Requirement

Run time requirement refers to hardware and software requirement in order to run the system. These requirements specify the conditions needed to run the system.

4.2.1 Server Hardware Requirement

- A server with at least Pentium 166 MHz processor and least 64 MB RAM
- Network card and network connection with recommended bandwidth at least 10 Mbps or above.

4.2.2 Server Software Requirement

- Internet Information Server 5.0/5.1
- Microsoft Windows 2000 or XP with .Net Framework
- Internet Explorer 5.0 and above
- Asp.NET enable
- Microsoft SQL

4.2.3 Client Hardware Requirement

- Any compatible PC with recommended at least 486-processor and 8 MB RAM
- PC with Internet connection.

4.2.4 Client Software Requirement

- Any operating System with VBScript and HTML compatible.

4.3 Client/ server architecture

3-tier client/server architecture is chosen to implement this system. A simple tier host system is not feasible because the web-based system is in a client server environment whereas the 2-tier architecture need the software to be installed on multiple clients. The 3- tier architecture is chosen because:

- Some upgrades can be done entirely at the server level
- An increasing number of homogeneous products are available off the shelf and pre-made software is cheap.
- Since only the information to be displayed is sent on the hardware, there is title hardware bandwidth comparative to the client –centric modes
- Three tier architectures facilitate software development because each tier can be built and executed on a separate platform, thus making it easier to organize the implementation
- The third tier provides database management functionality and is dedicated to data and file services that can be optimized without using any proprietary database management system languages.
- Three tier architectures facilitate software development because each tier can be built and executed on a separate platform, thus making it easier to organize the implementation.

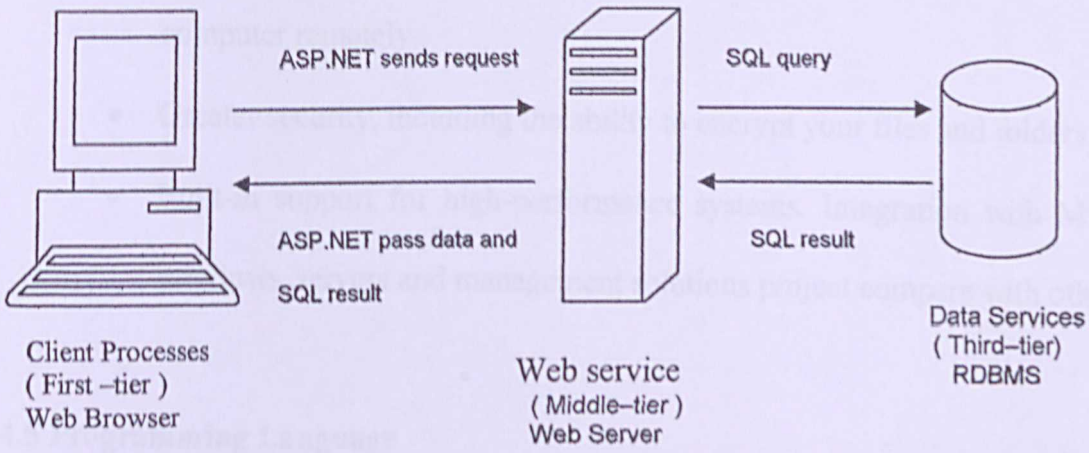


Figure 4.1: 3-tier client/server architecture

4.4 Operating System

Microsoft® Windows® XP Professional is the next version of the Windows operating system, which is designed for businesses of all sizes, and for individuals who demand the most from their computing experience. Windows XP Professional goes beyond the benefits of Windows XP Home Edition with advanced capabilities designed specifically to optimize productivity using the latest advancements in the digital world. Built on the solid foundation of Windows 2000, Windows XP Professional provides improved reliability, security, performance and ease of use, setting the new standard in efficient and dependable computing.

Benefits

- All the features of Windows XP Home Edition, including a new visual design and reliable foundation; complete digital media support; tools for instant messaging, voice and video conferencing, and application sharing; and the ability to recover from problems and get help and support when you need it.

- Premier mobile support for the ability to work offline or access your computer remotely.
- Greater security, including the ability to encrypt your files and folders.
- Built-in support for high-performance systems. Integration with Microsoft Windows Servers and management solutions project compare with others.

4.5 Programming Language

4.5.1 ASP.NET

ASP.NET is chosen as a web programming language for the system because ASP.NET has better language support, large set of new controls and XML, based components and better user authentications. ASP.NET provides increased performance by running compiled code.

Why ASP.NET is chosen not ASP? ASP.NET provides:

- Better language Support
- Programming Controls
- Event Driven Programming
- XML Based Component
- User Authentication, with Account Roles
- Higher Scalability
- Increased Performance-Compiled Code
- Easier Configuration

Language support

- ASP.NET uses the new ADO.NET

- ASP.NET supports full Visual Basic, not VBScript
- ASP.NET support C# and C++
- ASP.NET support JavaScript

ASP.NET Controls

ASP .NET contains a large set of HTML controls. Almost all HTML elements on a page can be defined as ASP .NET control objects that can be controlled by scripts.

ASP .NET also contains a new set of object oriented input controls, like programmable list boxes, validation controls.

A new data grid control supports sorting, data paging, and everything you expect from a dataset control.

COMPATIBILITY

Although ASP.NET is not fully compatible with the earlier versions of ASP, so most of the old ASP code will need some changes to run under ASP.NET. However, this problem can be solved by using the new file extension ".aspx" and this will make ASP.NET application able to run side by side with standard ASP application on the same server.

It allows cross-platform scripting of events, objects, and actions. Besides add simple interactive behaviors to an HTML page, it also can create dynamic HTML pages.

4.5.2 HTML (Hypertext Markup Language)

It is a compulsory language that is needed in order for user to view any output on Internet. HTML is the set of "markup" symbols or codes inserted in a file intended for

display on a World Wide Web browser. The markup tells the Web browser how to display a Web page's words and images for the user. HTML is also a standard recommended by the World Wide Web Consortium (W3C) and adhered to by the major browsers, such as Microsoft's Internet Explorer and Netscape's Navigator.

As a conclusion, it is the most important language that must include in every web page because it has became the lingua franca of the web

4.5.3 JavaScript

JavaScript is a scripting language that allows the application run over on the Internet. Object-oriented. It allows cross-platform scripting of events, objects, and actions. Besides add simple interactive behaviors to an HTML page, it also can create dynamic HTML pages. No distinction between types of objects. Inheritance is through the prototype mechanism, and properties and methods can be added to any object dynamically. JavaScript is lightweight interpreter as VBScript, and it is easier to learn. It also can help productive with less time or faster. Therefore, JavaScript is selected as one of the scripting language besides HTML.

4.5.4 VBScript

VBScript is an interpreted script language from Microsoft that is a subset of its Visual Basic programming language. In general, script languages are easier and faster to code in than the more structured, compiled languages such as C and C++ and are ideal for smaller programs of limited capability or that can reuse and tie together existing compiled programs. The function of VBScript is to make Web application more dynamic

When used with Internet Explorer, VBScript is directly comparable to JavaScript. Like JavaScript, VBScript is a pure interpreter that processes source code embedded directly in the HTML. VBScript code, like JavaScript does not produces standalone applets but is used to add intelligence and interactivity to HTML document. For programmers who already know Microsoft Visual Basic, VBScript is a valuable alternative to JavaScript in developing Web pages.

4.6 Internet Information Server

Windows XP Professional includes Internet Information Services (IIS) version 5.1, which makes it possible for you to host your own Web site on the Internet or your intranet.

IIS includes a broad range of administrative features for managing Web sites. With programmatic features like Active Server Pages (ASP), you can create and deploy scalable, flexible Web applications on the Internet or your intranet.

Other features of IIS 5.1 in Windows XP Professional include:

- Microsoft Management Console (MMC) snap-in for managing IIS. The MMC task pad considerably simplifies the administration of your Web site. You can select the task you want to complete, and a wizard walks you through the steps.
- Support for ASP.NET. IIS support for ASP provides an easy-to-use alternative to Common Gateway Interface (CGI) and Internet Server Application Program Interface (ISAPI) by letting content developers embed any scripting language or server component into their HTML pages. ASP pages provide standards-based

database connectivity and the ability to customize content for different browsers. ASP.NET also provides error-handling capabilities for Web-based applications.

- Web Folders let users maintain a consistent look and feel between navigating the local file system, a networked drive, and an Internet Web site.
- With FrontPage Server Extensions, administrators can view and manage a Web site in a graphical interface, so creating Web sites with the FrontPage Web site creation and management tool is as easy as clicking a check box on a property page for the Web site.
- Administrators can use Simple Mail Transfer Protocol (SMTP) and Network News Transport Protocol (NNTP) Services to set up intranet mail and news services that work in conjunction with IIS.

IIS 5.1 for Windows XP Professional is designed for users developing a Web service for home or for office use. It can service only 10 simultaneous client connections, only one Web site, and it does not have all the features of the server versions.

4.7 Database Consideration

In this system, a database is needed to store the relevant of thesis data and information. The database selected is SQL Server 2000 is chosen as the database management system for the online survey system.

SQL Server 2000 has been chosen because it has the largest number of third-party, front-end support products worldwide, from those designed strictly for application development to add-in SQL Server access modules for standard PC-based DBMSs such

as Paradox and dBase. There are even access modules that let the users query the database from the leading spreadsheet programs.

In addition, SQL server well integrated with other Microsoft products and providing universal data access. Plus, it has good recovery and distributed transaction support. And it support up to 50 concurrent users. It is also the record-holder of important benchmark awards for scalability and speed, fully Web-enabled database product, providing core support for Extensible Markup Language (XML) and the ability to query across the Internet and beyond the firewall.

The most advantages of it are having an ease-of-use through SQL Server's graphical management tools. This user-friendly interface can help user easier to learn on it if compare with other database such as MySQL database. However, this database is also not too small size like Microsoft Access and too large such as Oracle. From aspect of cost, it is cheaper than Oracle.

4.8 Database Connectivity

After considering a few method of database connectivity,ADO.NET is chosen because of:

Interoperability

ADO.NET applications can take advantage of the flexibility and broad acceptance of XML. Because XML is the format for transmitting datasets across the network, any component that can read the XML format can process data.

Maintainability

In the life of a deployed system, modest changes are possible, but substantial, architectural changes are rarely attempted because they are so difficult.

Programmability

ADO.NET data components in Visual Studio encapsulate data access functionality in various ways that help you program more quickly and with fewer mistakes. For example, data commands abstract the task of building and executing SQL statements or stored procedures.

Performance

For disconnected applications, ADO.NET datasets offer performance advantages over ADO disconnected recordsets.

Scalability

ADO.NET accommodates scalability by encouraging programmers to conserve limited resources. Because any ADO.NET application employs disconnected access to data, it does not retain database locks or active database connections for long durations. (ADO.NET, 2003)

4.9 Web Development Tool

There is a lot of editor in the market to help us to develop a good website. From a lot of them, I choose:

- **Visual Studio .NET**

Visual Studio .NET as my main web development tools because it is a complete set of development tools for building ASP.NET Web applications, XML Web services, desktop applications, and mobile applications. Visual Basic .NET, Visual C++ .NET, and Visual C# .NET all use the same integrated development environment (IDE), which allows them to share tools and facilitates in the creation of mixed-language solutions. In addition, these languages leverage the functionality of the .NET Framework, which provides access to key technologies that simplify the development of ASP Web applications and XML Web services.

- **Microsoft FrontPage 2000**

It is a comprehensive solution for publishing and managing workgroup Web sites and also helps users create the web sites and pages.

- **Macromedia Dream weaver 4.0**

It is a professional HTML editor and very powerful web design tool for visually designing and managing web sites and pages.

4.10 Web Browser

Internet Explorer and Netscape Navigator/Communicator are both very good browsers and the speed at which they upload and download pages is almost the same. However, Explorer has many compatibility issues with Java, JavaScript, VBScript and HTML. Beside that, IE is bundled with Microsoft OS that make job easy and save the time in installing new Internet browser.

4.11 Chapter Summary

System analysis is used to determine and clearly to find out what a system does and to analyze the system needs either is functional requirement or non-functional requirement. Beside that, it also helps us to determine what kind of programming language, technology and development tools to be used.

CHAPTER 5 SYSTEM DESIGN

Design is a meaningful engineering representation of something that must be built. The system design phase is the phase in which requirements produced in the system analysis phase are translated into a representation of the system. This phase will be focused on functionality design, user interface design and database design.

5.1 Design Consideration

In this stage, there are several aspect are needed to be considered such as:

- Logical directory structure
- Effectiveness of user interfaces
- Size of database
- Efficiency of process

a) Logical directory Structure

A clear hierarchical directory structure makes the maintenance of web site much easier.

b) Effectiveness of user interface

An effective user interfaces is very important for the web application due to the fact that users are the key factor in determining the success of the system.

c) **Size of the database**

During the database design, it is important to determine the accurate size of each field in database in order to make sure that the database is in the maximum performance and make full use of the resource.

d) **Efficiency of the process**

A process should keep as simple as possible and the code should efficient enough to Maintain the responsiveness of the entire system at high level. The system design will separate in to a few component, there are:

i. System functionality design

ii. Database design

iii. Graphical user interface design.

5.2 System functionality Design

5.2.1 Online Survey System Work Flow

The general workflow gives overview architecture of the system. The component is designed to leverages the traditional client/server architecture and extend it to be the web, divided into three distinct tier-user services, server services, and database services. Component were built into each tiers to fulfill its role and then tied together to form a final solution.

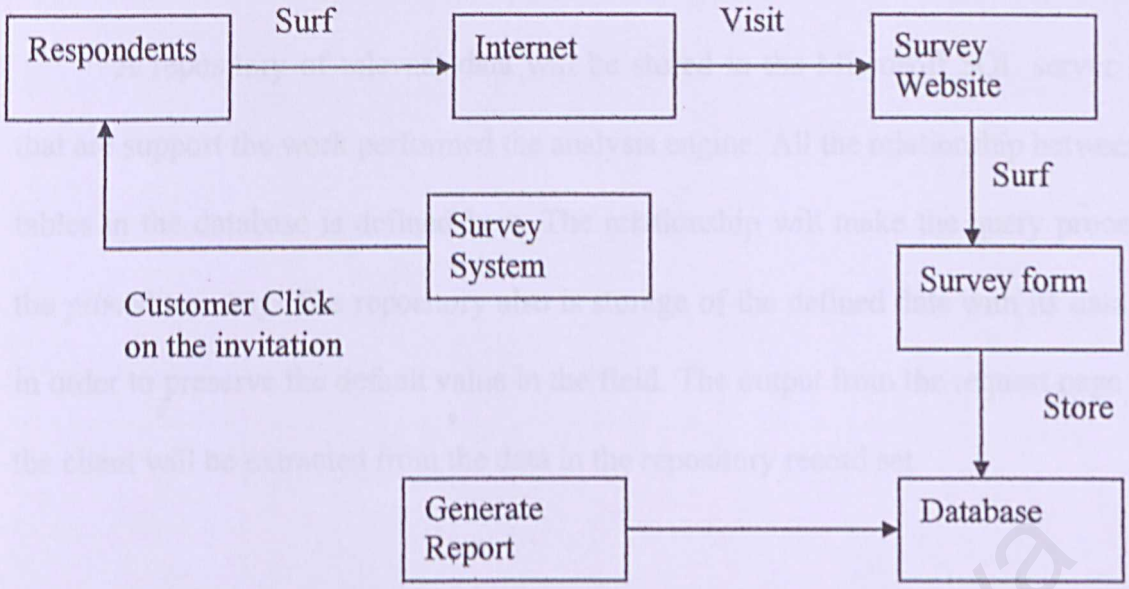


Figure 5.1: General Workflow of Survey System

1. User Services

At the services level (which is the client browser), there is component to gather input variables for the analysis (e.g. A user request or query using ActiveX control or a web page). Client could query data from the online page as user services level. Besides that, there is also a component to display the result of the analysis to client. Ils is responsible to publish the output result from the client request.

2. Server services

At this level, there is an engine being used to perform the analysis. All the response and request are being control by the written code specifying its rules. For example: a set of procedures that handles report-generating module. the respondents' feedback will be stored within the rules scope. Both client coordinates these rule and server script exist in asp document.

3. Database Services

A repository of relevant data will be stored in the Microsoft SQL server 2000 that are support the work performed the analysis engine. All the relationship between the tables in the database is defined here. The relationship will make the query process in the procedural way. The repository also is storage of the defined data with its data type in order to preserve the default value in the field. The output from the request page from the client will be extracted from the data in the repository record set.

5.3 Structure Chart

The structure chart shows all the relation between modules in TMS and is used to identify the activities that make up the system. It is used to model the program structure. Structure chart is used to depict high-level abstraction of a specified system. The use of structure chart is to describe the interaction between independent modules. Major functions form the initial component part of the structure chart, which can be broken into detailed sub-components.

The main system is divided into four major components:

- Administrator Module
- Supervisor Module

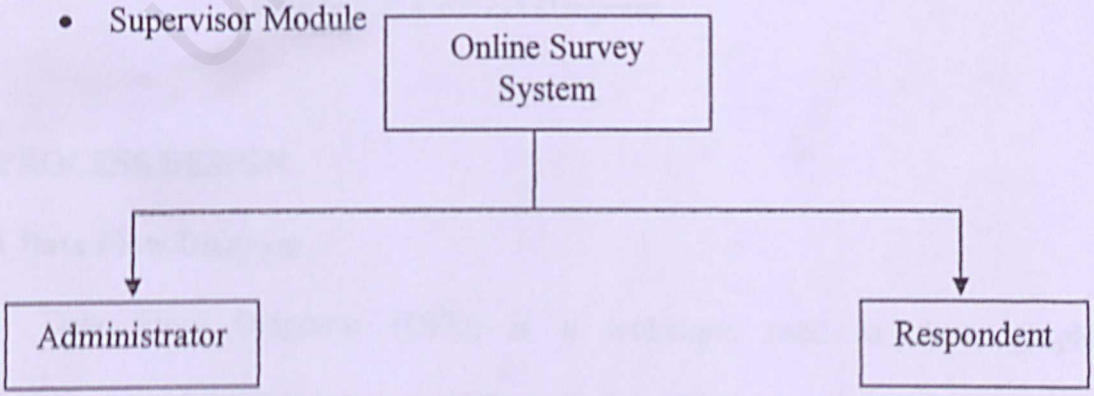


Figure5.2: Structure Chart

5.4 Context Diagram

The context diagram shows the entire system as a single process surrounded by the external entities. The major input and output are representing as data flows. The purpose of this kind of diagram is to furnish an easy overview of the whole system that will be developing or implement. (Kendall, K.E. and Kendall, J.E., 1999)

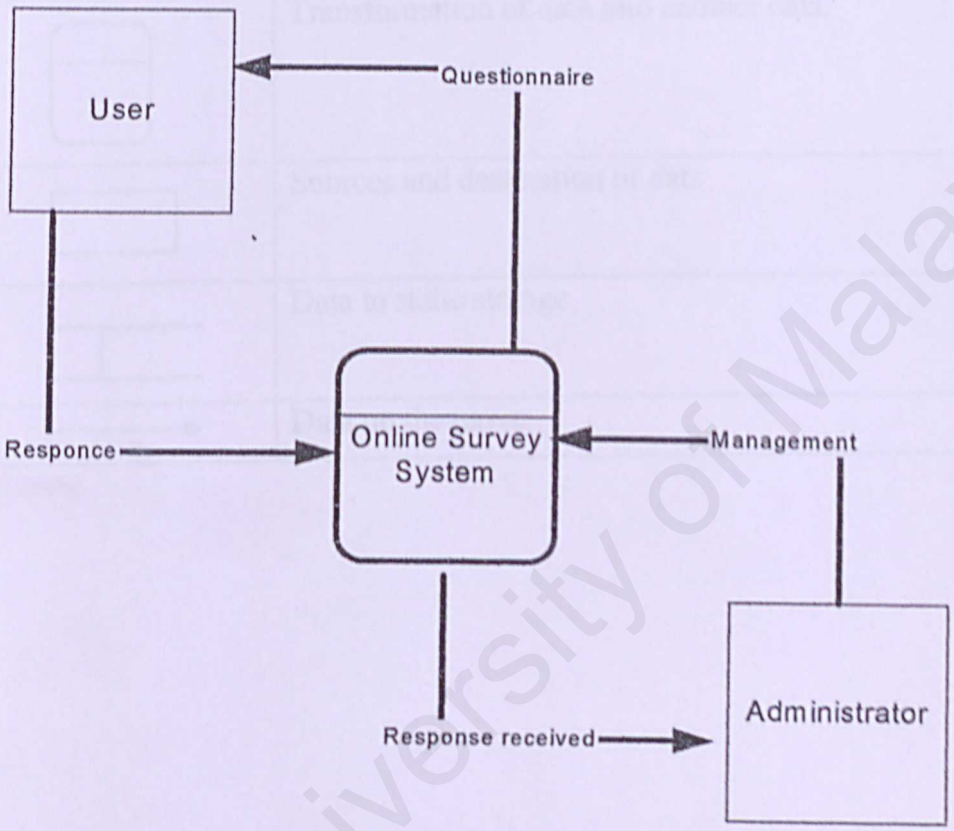


Figure 5.3: Context Diagram

5.5 PROCESS DESIGN

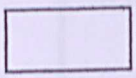
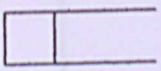
5.5.1 Data Flow Diagram

Data Flow Diagrams (DFD) is a technique used to show graphical characterization of the data process and flows in the system. The DFD gives an overview

of system inputs and outputs, processes and flows of data through each process. (Kendall, K.E. and Kendall, J.E., 1999)

The following is the basic symbols of a DFD.

Table 5.1: Data Flow Diagram objects

Symbol	Definition
	Transformation of data into another data.
	Sources and destination of data
	Data in static storage.
	Data on the move.

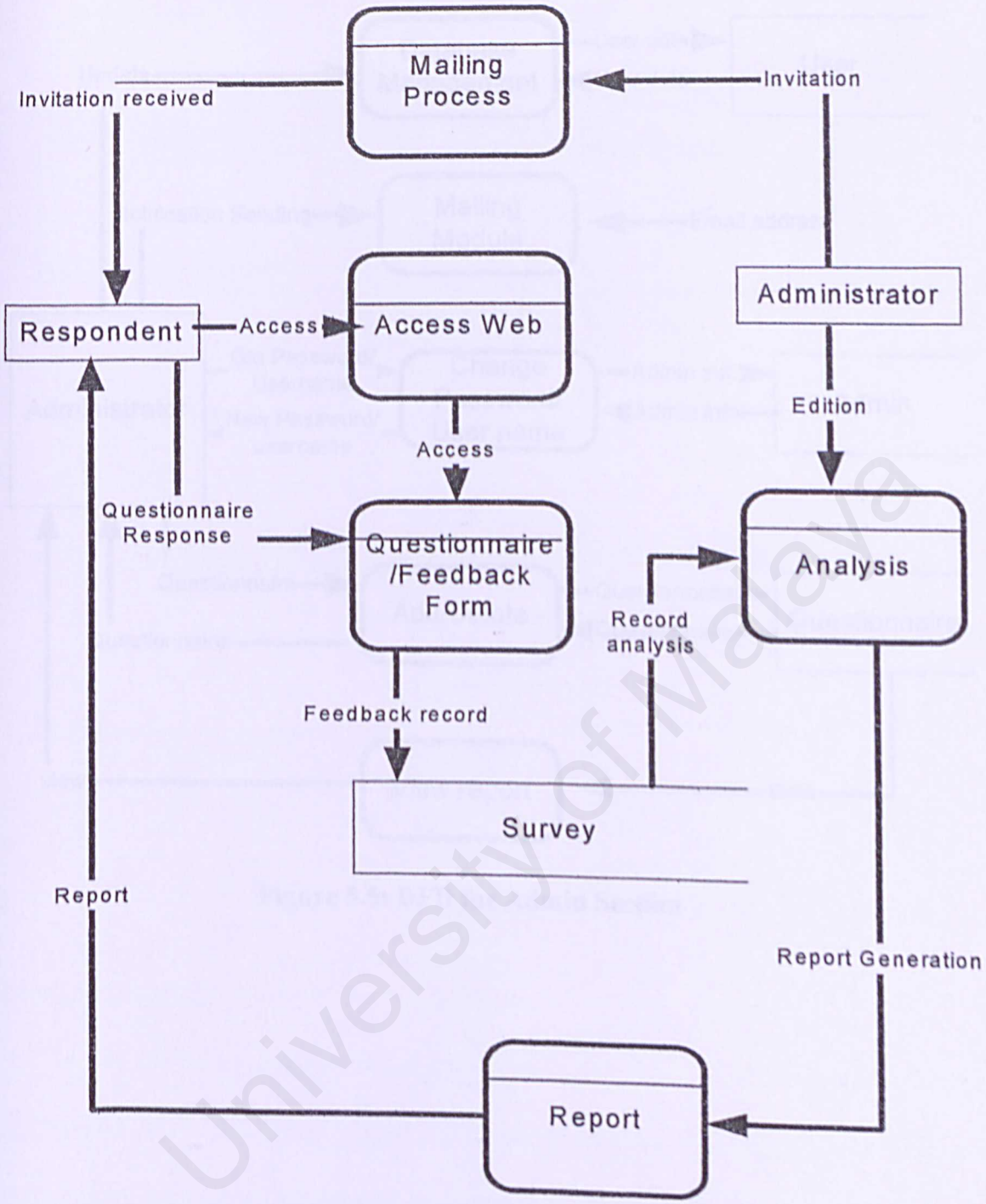


Figure 5.4: DFD for whole System

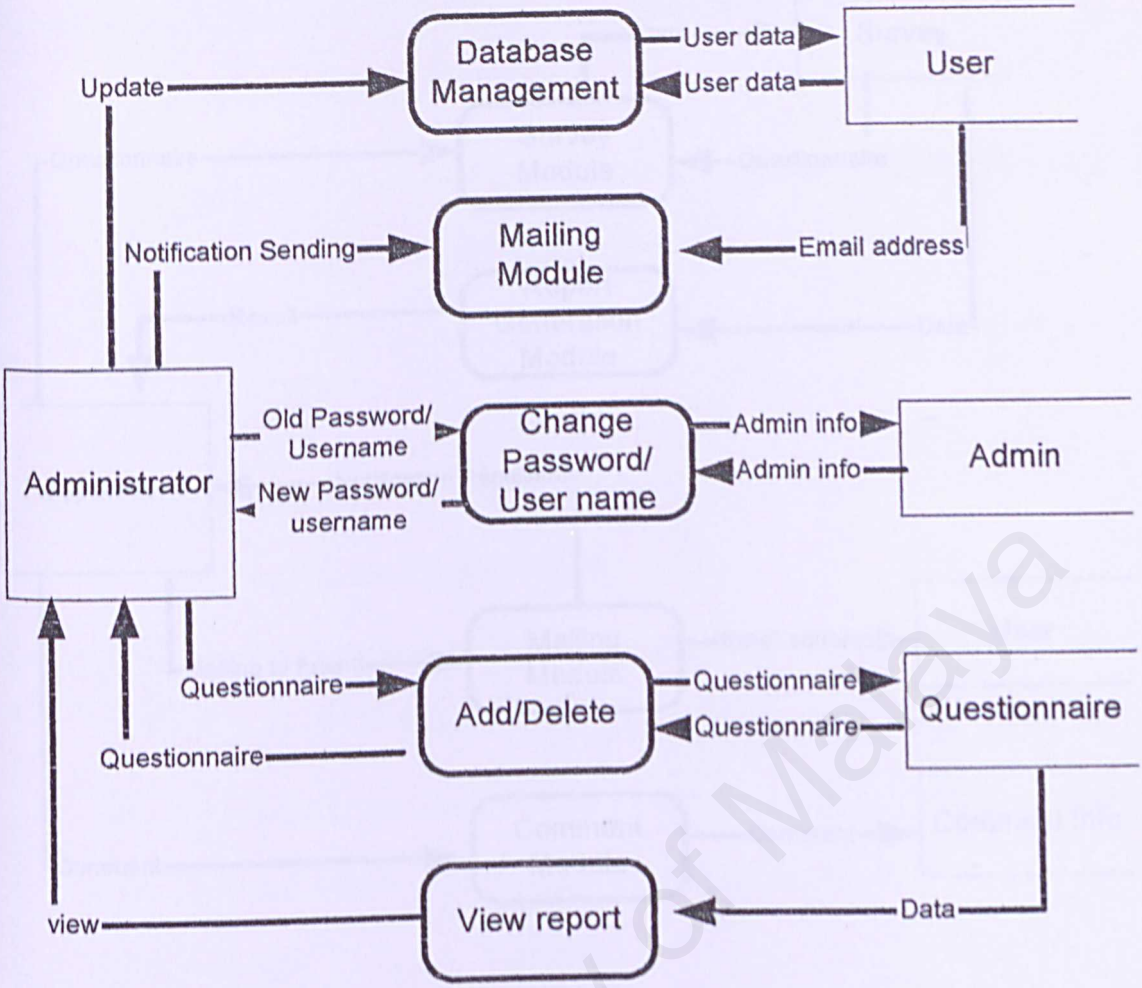


Figure 5.5: DFD for Admin Section

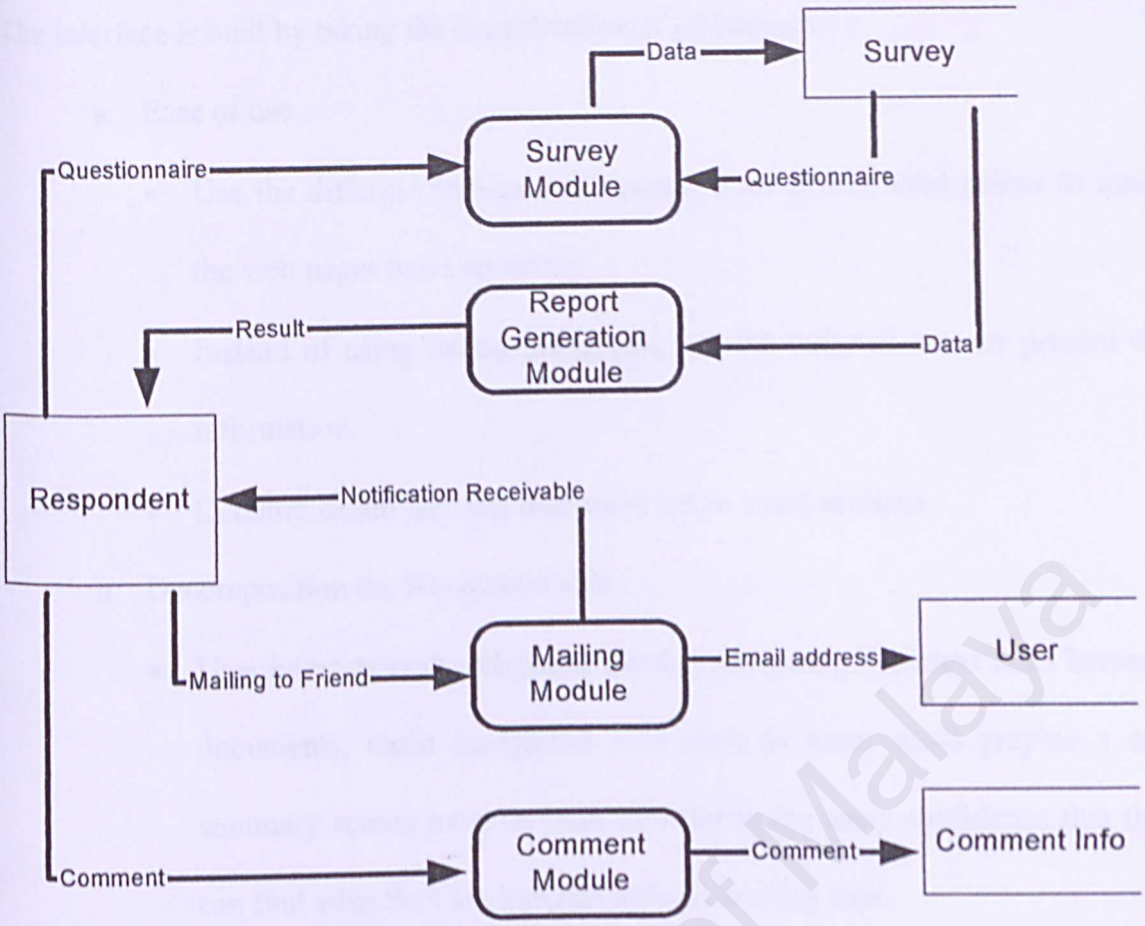


Figure 5.6: DFD for User Section

5.6 User Interface Design

The interface is the system for the most users. User interface design establisher the layout and interaction. User interface establishes the layout and interaction mechanism for human interaction and is one of the important aspects of the system development process. There are several reasons why the user interfaces are important:

a) The more intuitive the user interface, the easier it is to train the people to use it

b) The good interface will reduce the cost and the help provided to the user and increase the user's satisfaction with work that designer had done.

The interface is built by taking the consideration of its features:

a. Ease of use

- Use the different background ranging from GIF to solid colour to make the web pages more attractive
- Instead of using boring paragraph, use the bulleted item to present the information.
- Decomposition the long document into a small sections

b. Decomposition the Navigation aids

- User interacts with web pages involve navigating hypertext links between documents, clean navigation aids such as icon, small graphic s and summary screen must be built in order to the users confidence that they can find what they are looking without wasting time.

c. Performance

- Avoid using so many graphic on web pages so that the loading of the web pages will be much faster.

d. Links

- Provide the link in a proper way so that the dead-end pages will not be happened.
- The work and the phrase for link must be understandable.

e. Attractiveness

- The web page must build in such a way that can attract the respondents to visit it frequently.

There are standards to keep in mind when evaluating the interface

- The necessary training period for user should be acceptable
- The users in the early training should be able to identify the usage of the objects appear in the interface without refer to the help.
- The time that the users and the system to bound back from errors should be short.

Report design

Reporting is the ultimate product of the online survey system. The conclusion can be made from the report. There is a few types of reports that can be generated:

- Statistical report: A simple report showing the answers to question, the arithmetic means, the standard deviation, the percentages and the corresponding chart.
- Response listing: A list of all responses with the ability of zeroing into one particular response to view its result
- Daily response report: A report showing the number of the responses made everyday.
- Correlation analysis: A report where 2 values are analyzed in term of their correlation relationship.

- The Online Survey homepage displays the information and linking that can be click by user to go to other pages in this system. Users can link to any modules by clicking on the button of the top of page.

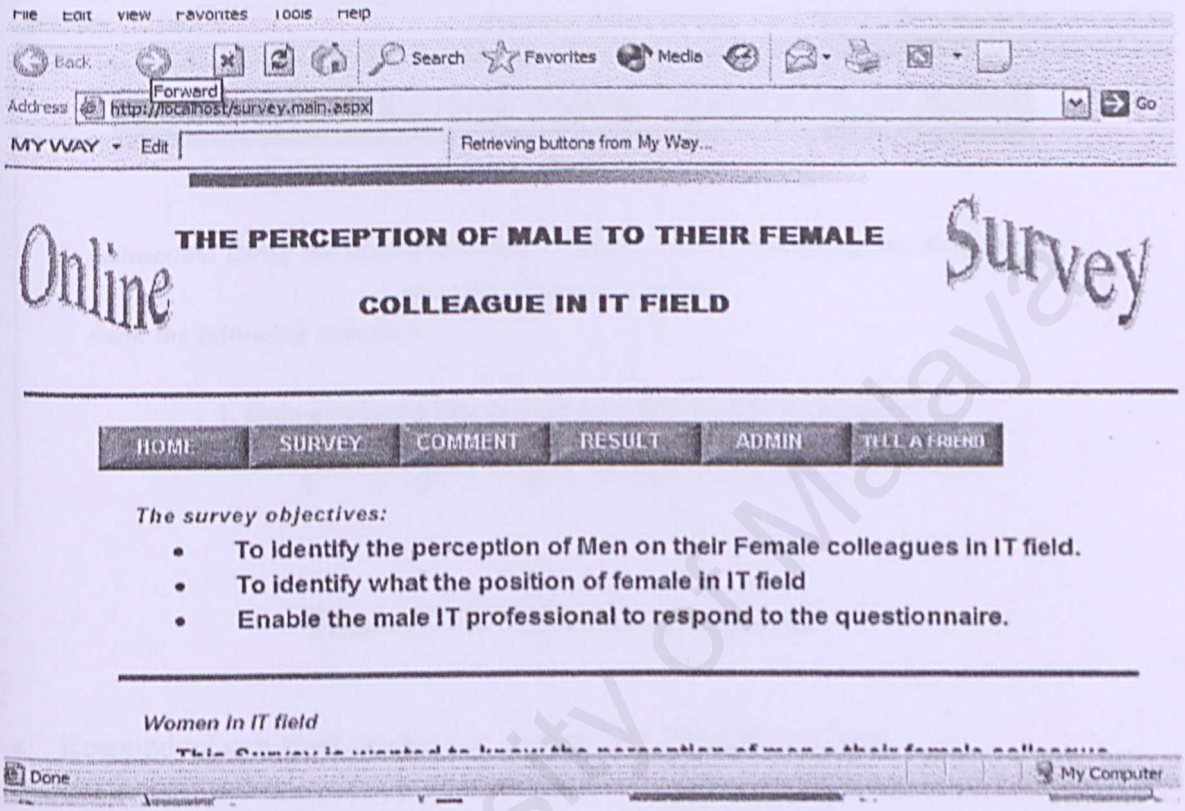


Figure 5.7: Interface of homepage

- Survey page provide questionnaire for users.

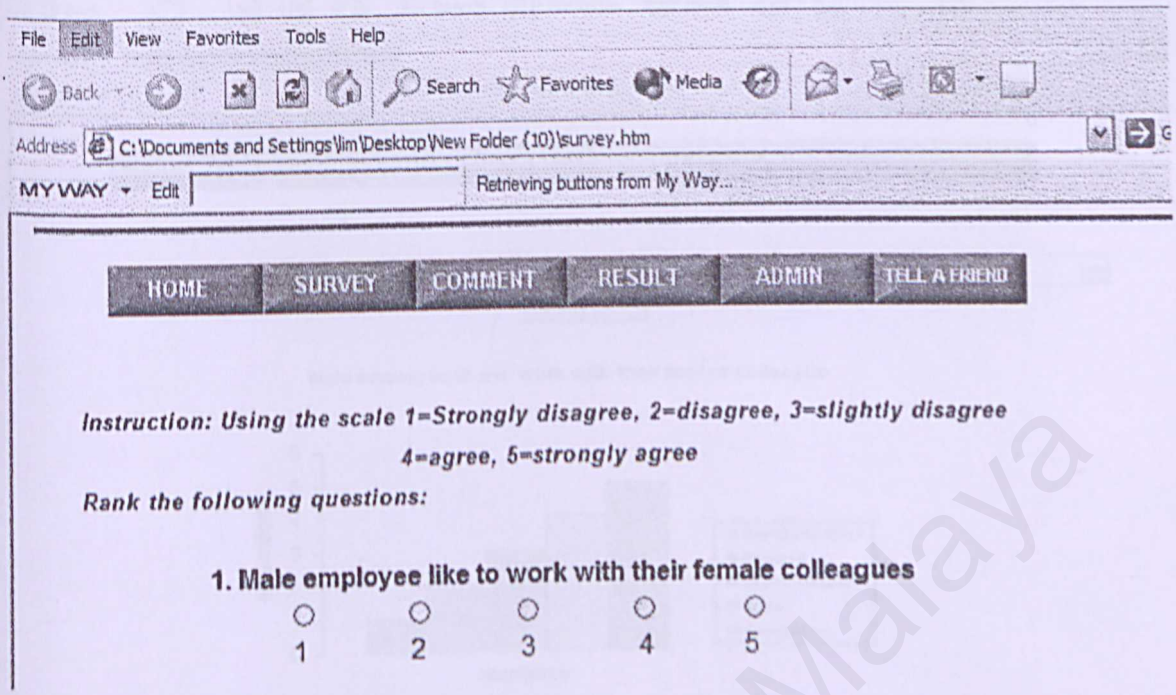


Figure5.8: Interface for survey page

- Respondent can send message to their friend through this page.

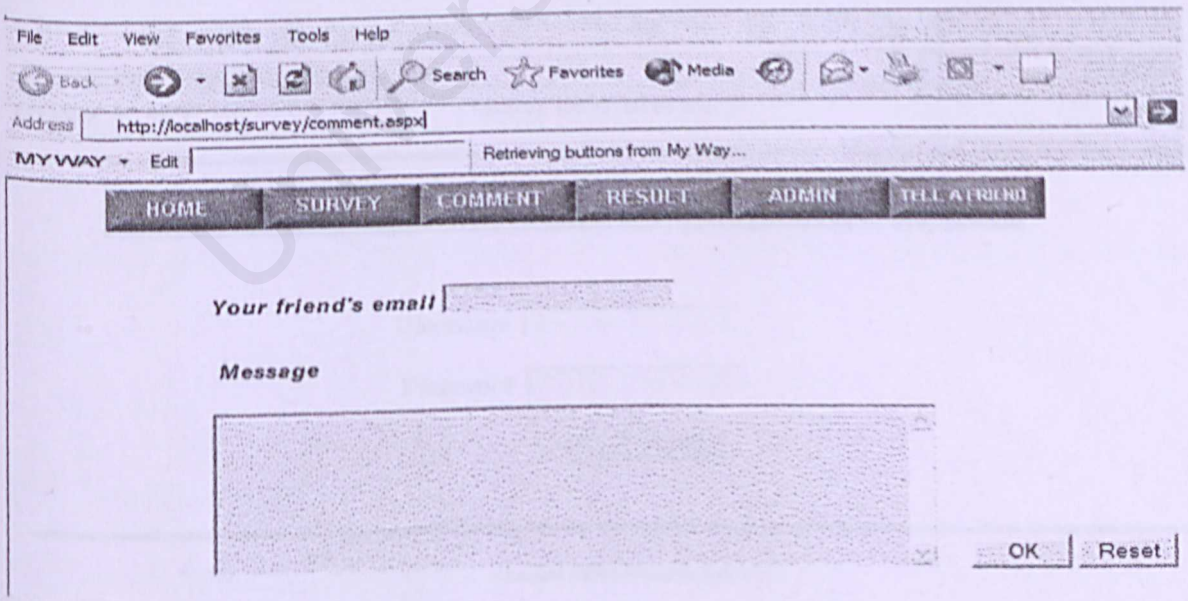


Figure 5.9: Interface for email page

- Respondents can see the result of the survey

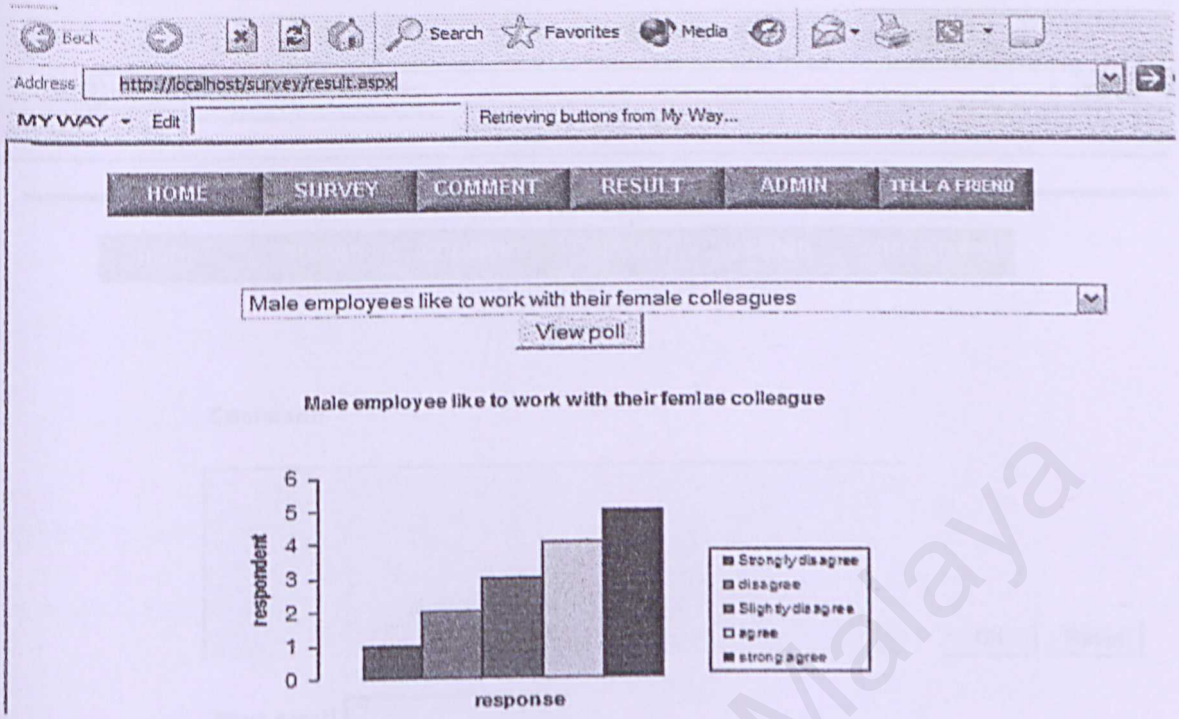


Figure 5.10: Interface for the result page

- Administrator has to login this page before manipulate the data

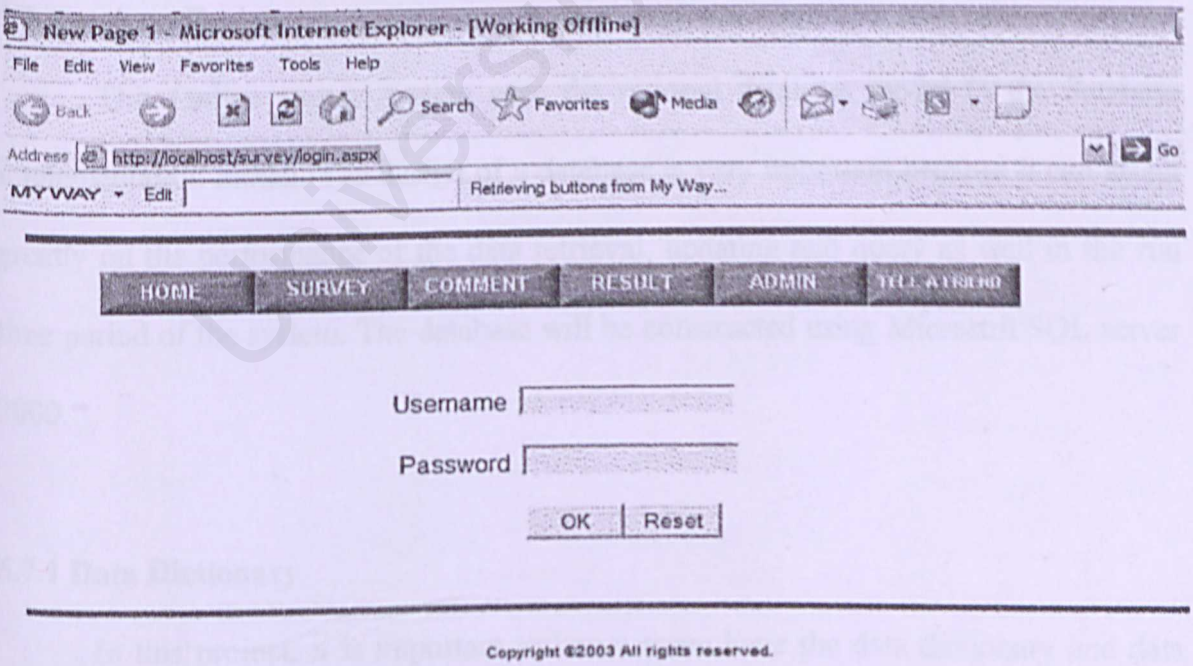


Figure5.11: Interface for login page

- Respondent can send the feedback

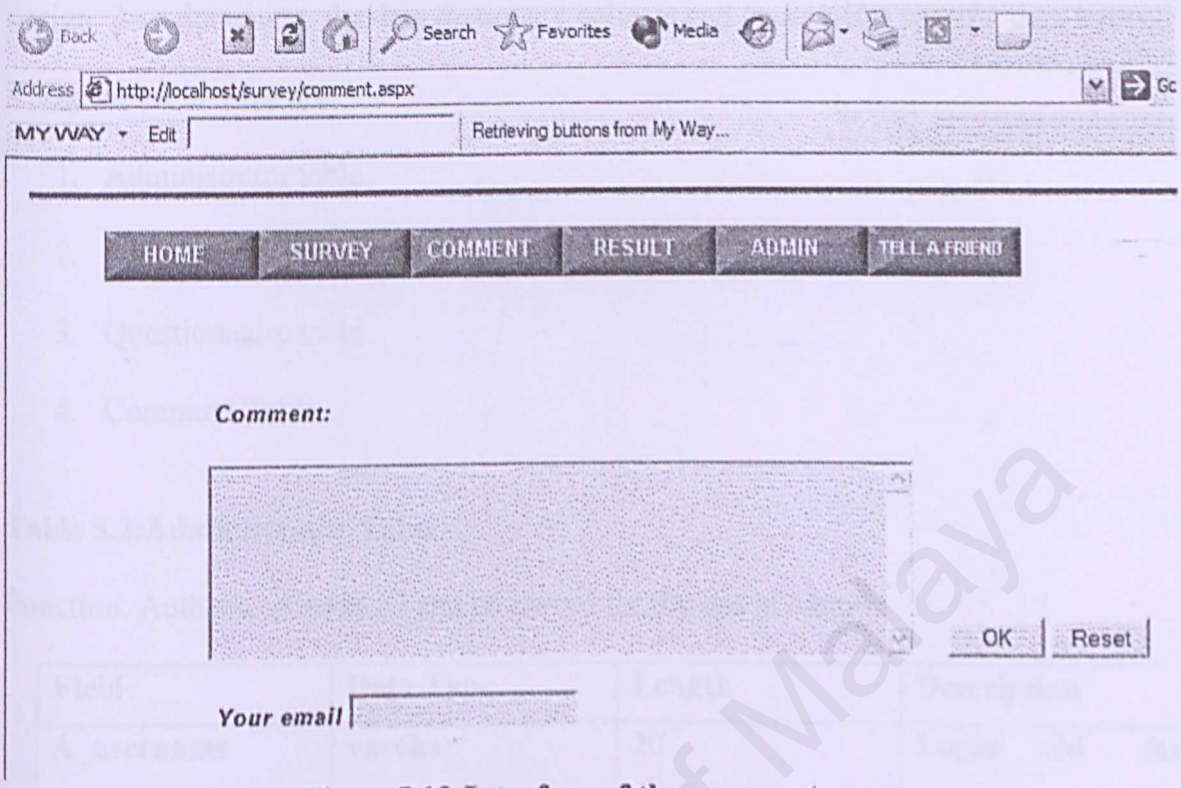


Figure5.12:Interface of the comment page

5.7 Database Design

This Online survey system uses the rational database model in the database implementation model. The design of a database is very important because it can affect greatly on the performance of the data retrieval, updating and query as well in the run time period of the system. The database will be constructed using Microsoft SQL server 2000.

5.7.1 Data Dictionary

In this project, it is important to know some have the data dictionary and data types used in Ms SQL server database. The data dictionary is a reference work of data

about data, one that is compiled by system analysts to guide them through analysis and design. As a document, the data dictionary collects and coordinates specific data terms.

Those tables involve are:

1. Administrator table
2. Respondents table
3. Questionnaire table
4. Comment Table

Table 5.2:Administrator Table

Function: Authorized login ID and password for the use of admin

Field	Data Type	Length	Description
A_username	varchar	20	Login id for administrator
A_password	varchar	6	Password administrator

Table 5.3:User information Table

Function: Store respondents' information

Field	Data Type	Length	Description
Survey_ID	Int	Auto number	ID given to each respondent
Name_Res	Varchar	50	Respondent name
DOB	Date/Time	DD/MM/YYYY	Date of Birth
Email Address	Varchar	50	Email
Field	Varchar	20	Which IT Field Respondent Involve

Position	**Varchar**	**20**	**Position of job**
Pos_of_female_col	**Varchar**	**15**	**Choose from the question (position of the female colleague, Subordinate or superior)**
Response_date	**Date/time**	**DD/MM/YYYY**	**Date of answering suervey**

Table 5.4:Questionnaire Table

Function: Store the questions of the survey

Field	Data Type	Length	Description
Questionnaire_id	**int**	**Auto number**	**Id given to each question**
Questionnaire	**varchar**	**255**	**Questionnaire used in survey**
Answer1	**int**	**5**	**Count the total of the answer(strongly disagree)**
Answer2	**int**	**5**	**Count the total of the answer (strongly disagree)**
Answer3	**int**	**5**	**Count the total of the answer (strongly disagree)**
Answer4	**int**	**5**	**Count the total of**

			the answer (strongly disagree)
Answer5	**int**	**5**	**Count the total of the answer (strongly disagree)**

Table 5.5:Comment Table

Function: Store the comment of the respondent

Field	Data Type	Length	Description
Survey_ID	**Int**	5	**ID given to each respondent**
Comment_ID	**Int**	5	**ID given to each comment**
Comment	**Varchar**	255	**Comment given by Respondent**

5.8 Chapter Summary

As a conclusion, system design is the evaluation of alternative solutions and the specifications of detailed computer-based solution. System design can be represented by program design and Database design. The program design is based on the two sections in this online survey system. The program will designed based on the flow of the system However the database will show how the relation among the data that store in database.

System design will determine the success of the application. Other features include the components and elements of a system and their appearance to the user. Functional and non-functional requirements found in the system analysis stage are turned into design specification. From that the expected outcome of the system can be view through the user interface design.

The system development, testing and maintenance, and system evaluation will be continue in next few chapters.

CHAPTER 6 SYSTEM IMPLEMENTATION

In this phase, the design model of Online Survey is going to be transformed into workable product. Therefore, system implementation involved the transformation of the software representation produces by the design into a computer understandable form. It involves designing coding of the program by using the appropriate and suitable language and coding approach, testing of the system to ensure every function work properly and debugging the code, which will identify and correct bug within program.

6.1 Development Environment

The first stage of system implementation involves setting up the development environment. The success of the project is much depends much on the suitable hardware and software.

6.1.1 Hardware Configuration

The following hardware specifications have been used to develop the system:

- Intel Pentium IV 2.6 GHz
- 256 MB SD RAM
- 60 GB Hard Disk
- 15" color monitor capable of 1024 x 768 resolution
- Standard Input and Output
- Others standard computer peripherals

6.1.2 Software Configuration

The software used in designing throughout the development process as pertaining to the specific usage is:

Table 6.1: Software Used

Software	Usage	Description
Microsoft Windows XP	System Development	Operating System
Microsoft SQL Server 2000	Database	Database Management System
Internet Explorer 6.0	System Development	Web Browser
Visual Studio.Net	System Development	Authoring Tools
Microsoft Word	System Development	Documentation

6.2 Platform Development

Services and tools installations may be the very first step in order to start the development. Platform development includes setting up the operating system and web server.

6.2.1 Setting Up Operating System

Microsoft Windows XP Professional is used as the operating system for this project. Before the installation begins, the hard disk need to be formatted. This is to ensure a more stable and secure environment. Moreover, it can also prevent the environment being affected by previous settings or configurations. Windows XP's installation is very easy as it provides user friendly and descriptive interface guide. User just needs to follow the step-by-step instruction appear on the installation's menu interface.

6.2.2 Setting Up Web Server

Microsoft Internet Information Server (IIS) version 5.1 is chosen as the web server for this project. IIS provides a feature that allows web content to be organized by using virtual servers. It enables user to map local directory to virtual directory and create local web site. Virtual directory is created for Online Survey and is accessed through http://servername/survey/

6.3 Database Implementation

Microsoft SQL Server 2000 is used as DBMS to manage and control database access in Online Survey. Data retrieving, storing, deleting and other information manipulation activities can be done.

6.3.1 Setting Up Database

After the SQL Server has been installed successfully, a database named 'INECT3' is created. The creation of database is done using the SQL Server 2000 Enterprise Manager. After create the database, create the table according to database design. Field types and size of length are specified according to functional requirement and logic.

6.3.2 Database Connection

When building ASP.Net application, connection to database is needed to extract or manipulate data. With ADO.Net, connection to 'Online survey' is being done using SQLConnection object. In order to use this object, the first step is to import the System.Data.SqlClient namespace into the application using the "Import" keyword.

```
<%@ Import Namespace="System.Data.SqlClient" %>
```

Following is an example of the code for database connection.

```
Dim DBConn as sqlConnection
MyConnection = New SqlConnection("server=(local); database=INETC3;
Trusted_Connection=true")
```

6.4 Program Development

During program development, program is written, user interface is being developed and database is initialized with data.

6.4.1 Program Development Process

Basically, the Online Survey System is following a program development process that consists of 5 steps:

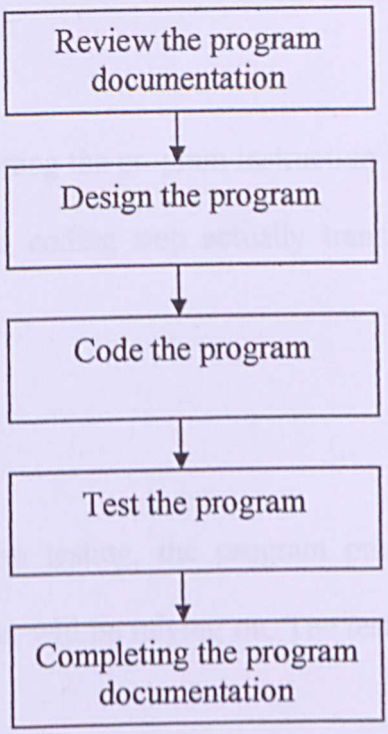


Figure 6-1: Program Development Process

i. Review the Program Documentation

The program documentation that was prepared during the early phases needs to be reviewed. This documentation is done for the system designer to understand better of the work that need to be covered during the coding phase.

ii. Design the Program

After review the program documentation, the second level of program design needs to be completed during the system development where the system designer decides exactly what the program can accomplish. This is the process of what it must do by developing a logical solution to the programming problem.

iii. Code the Program

Coding is a process of writing the program instruction where this instruction implements the program design. The coding step actually translates the design specification to machine-readable format.

iv. Test the Program

During the level program testing, the program processes actual data and produces information on which user will be relying on. The testing involved most are unit testing and integration testing.

v. Completing the Program Documentation

Completing the program is essential for the successful operation and maintenance of the system. This documentation includes the system's user manual that may be needed by most of the customer as well as the system administrator.

6.4.2 Coding Approach

This system is developed modularly using top-down approach. This top-down approach allows the higher-level modules to be coded first before the lower-level modules. The codes in the lower modules contain only an entry and an exit. In shorts, this approach look at the large picture of the system first, and then exploding into smaller part.

6.4.3 Coding Principle Applied

There are a few principles need to apply when coding the program.

Readability

Readability is essential for future enhancement. Coding style and convention applied may strongly affect the readability. Codes need to be formatted to enhance understanding.

Reusability

Reusability is an important principle. It can be considered as a method for improving product quality throughout the system development process. In addition, it also reduces the coding time as well as the testing and documentation time.

Modularity

Software with effective modularity is easier to develop because function may be compartmentalized and interfaces are simplified. Independent modules are easier to maintain because secondary effects caused by design or code modification are limited, error propagation is reduced, and reusable module are possible.

6.4.4 Style Adopted

The coding paradigm adopted by the system is oriented at giving reliability and performance a balance.

Naming Convention

Naming convention provides easy identification for the programmer. The naming convention is created with coding consistency and standardization in mind. For example:

Textbox	txt
Label	lbl
Button	btn

Indentation And Spacing

The main purpose of indentation and spacing is to ease reading and tracing of code. They make the coding looks neat and tidy.

Program Comments

The comments explain the logic of the certain code, the purpose of a particular program block or other descriptive label. For Example:

```
' Create Instance of Connection and Command Object
Dim myConnection As New SqlConnection("server=(local); database=INETC3; _
                                      Trusted_Connection=yes")
```

Sample Code

a. ASP.Net Coding Example

```
<%@ Page Language="VB" debug="true"%>
```

b. VB.Net Coding Example

i. Insert records into database

```
Dim DBConn as sqlConnection
  Dim DBInsert As New sqlCommand
  DBConn = New SqlConnection(
"Server=localhost;Database=INETC3;trusted_connection=true")
  DBInsert.CommandText="Insert Into SurveyQuestions (SurveyQuestionLong , SurveyID ) " _
  & " values ('" & replace(txtcommenttext.text,"' ","""") & " ', '1') "
```

ii. Select records from database

```
  DBCommand = New sqlDataAdapter _
      (" Select SurveyQuestionLong, SurveyQuestionID from SurveyQuestions" ,DBConn)
      ' & "Where SurveyQuestionID  = " _
      '& ddlQuestionID.SelectedItem.Value _
      ' & " Order By SurveyQuestionLong", DBConn)
    DBCommand.Fill(DSPageData, _
      "Answers")
    ddlQuestionID.DataSource = _
      DSPageData.Tables("Answers").DefaultView
    ddlQuestionID.DataBind()
```

iii. Send mail

```
<%@ Import namespace = "System.Web.Mail"%>

 :

 :

Dim objEmail as New MailMessage()

                        objEmail.To = txtTo.Text

                        objEmail.From = "webmaster@survey.com"

                        'objEmail.Cc = txtCc.Text

                        objEmail.Subject = "Please visit www.survey.com"

                        'objEmail.Body = txtName.Text & ", " &txtComments.Text

                        objEmail.Priority = MailPriority.High

smtpmail.smtpserver="universi-5e2x8l"

SmtpMail.Send (Mail)


Mail = Nothing
```

Exception Handling

```
try

SmtpMail.Send(objEmail)

Response.Write("Your E-mail has been sent sucessfully - Thank You")

catch exc as Exception

Response.Write("Send failure: " + exc.ToString())

End Try
```

ASP.NET Validation Control

```
<asp:regularexpressionvalidator id="reg2"
 ControlToValidate="txtemailAddr"
Runat="server" ErrorMessage="Invalid Email"
ValidationExpression="\w+([-+.]\w+)*@\w+([-.]\w+)*\.\w+([-.]\w+)*">
</asp:regularexpressionvalidator></TD>
                                                                    >
```

6.5 Chapter Summary

In this system implementation phase, nearly all the design phases that have been presented and directed toward a final objective that needs to translate representation of system into a form that can be understood by computer.

Chapter Seven presents the various type of system testing that includes the unit testing, integration testing and the system testing.

CHAPTER 7 SYSTEM TESTING

Testing is critical in uncovering logical error and to test the system reliability. The main objective of testing is to uncover different types of errors that exist while executing the system. System testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding. However, testing can only show that software defects are present.

In developing a system, testing usually involves several stages. An example of testing process is shown as below:

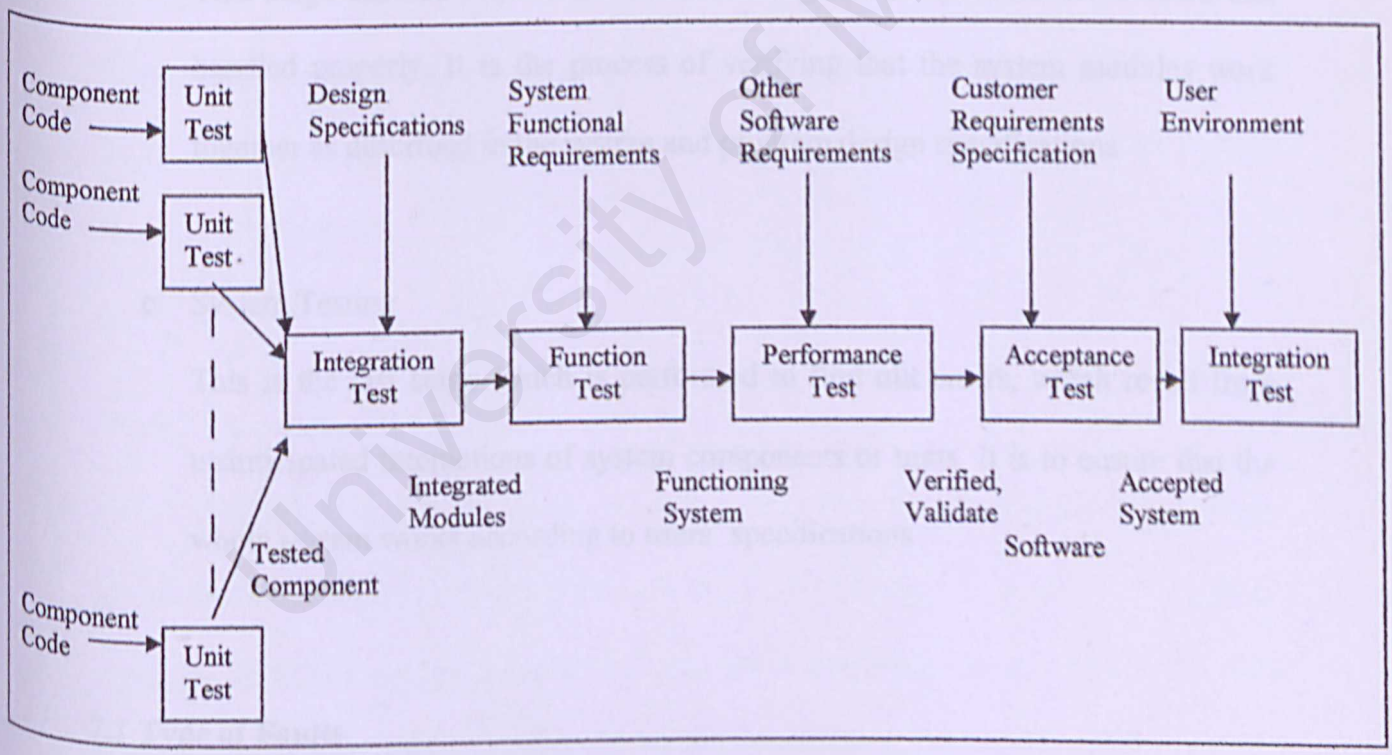


Figure 7.1: Testing process

Generally, there were 3 stages involve altogether and were listed down as below:

a. Unit Testing

This is the first stage of testing where each program component is tested on its own and is isolated from the other components in the system. It verifies that the component functions work properly with the types of input and output expected from studying the component's design. After each component has been tested, the interaction between these components must be tested again to ensure that the components can be integrated.

b. Integration Testing

This stage ensures that the interfaces among the components are defined and handled properly. It is the process of verifying that the system modules work together as described in the system and program design specifications

c. System Testing

This is the last stage which is performed to find out errors, which result from unanticipated interactions of system components or units. It is to ensure that the whole system works according to users' specifications.

7.1 Type of Faults

Types of faults that can be found in Online Survey system are algorithmic faults, throughput faults and computation faults.

7.1.1 Algorithmic faults

Algorithmic faults use to happen when a component's algorithm or logic fails to produce the expected output for a given input. This kind of fault always due to wrong proceeding steps. Examples of algorithmic faults in Online Survey system are:

- Comparison of wrong data type variable
- Forgetting to test for a particular condition.

7.1.2 Throughput/Performance faults

Throughput faults or performance faults use to happen when the component does not produce an expected speed. When discover this fault in Online Survey system, the fault is being carefully observed and monitor continuously to ensure performance meet requirement. In most cases, the fault occurs during massive usage of graphic on a particular application.

7.1.3 Computation/Precision faults

Computation or precision faults use to occur when a particular formula is being implemented wrongly or the component does not complete a result to a required accuracy. In online survey system, all components are being checked and tested with dummy data to ensure the computation works accordingly with its situation.

7.2 Testing Techniques Used

7.2.1 Ad Hoc Testing

Ad hoc testing is an attempt to break the program or make it fail with trying whatever comes to mind. Normally, many errors will be found during the testing.

7.2.2 White Box Testing

White Box testing is the type of testing that deals directly with the stricture of the code within a module or a code segment. There are basically six types of code coverage in white box testing. Most of the testing is discussed in the unit testing (refer section 7.3.1)

Segment Coverage

Each and every segment of the node between control structures is supposed to execute at least once.

Branch Node Coverage

Each and every branch of every possible direction is taken at least once.

Compound Condition Coverage

When multiple conditional appear in the code, every possible combination is tested based on a truth table.

Basis Path Testing

Each independent path through the code is usually taken as predetermined order. When dependencies appears in the code, each path where dependency appears exists must be tested.

Data Flow Testing

In online survey testing, this approach is to uncover anomalies such as variables, which are used but not initialized and declared.

Loop Testing

This type of testing is related to testing single loop (WHILE, FOR LOOP), concatenated loops (sequence of loop) and nested loops (one or more loops within loops).

7.2.3 Black Box Testing

This type of testing involves testing functions of a module without knowing the logic structure of the code. It focuses on the most important aspects of a module in the term of how well the module meets its specification.

Error Guessing

This approach is similar to 'ad hoc testing' where tester will try any type of test cases which come across his/her mind or pre-planned test cases.

Boundary Testing

This type of testing involves the boundaries of equivalent classes where the coverage of test cases will involve inside the boundary, on the boundary and outside the boundary.

Module Interface Testing

In this type of testing, each value within the interface is assured as correct as they related to the modules that call them. This means that specific calls in the calling module are tested to see whether they are in the right sequence and at the right type.

7.3 Testing Strategies

There are a few testing strategies such as unit, integration and system testing are done in order to test the reliability of Online Survey.

7.3.1 Unit Testing

Unit testing is done to uncover errors in each module. The primary goal of unit testing is to confirm that the unit is correctly coded and that is carries out the function as it is supposing to perform. Each unit is tested independently in order to assure their accuracy. For this system – online survey, each module may contain sub modules and the sub modules may consist of functions. The functions are individually tested before

the entire module is tested. In the development of online survey, unit testing was conducted after development of each of the component and it is a continuous process throughout the coding phase.

Online Survey Unit Testing

Below are some of the units testing being done on Online Survey:

- Test whether the data being passed to next program for processing contain the right value.
- Test whether the records being displayed is correct and matches the search criteria.
- The display is tested after a single program file has been developed to ensure that all the display is correct and expected. These interfaces contain lots of buttons and hyperlinks. Testing for those buttons and links is needed so that the program performs correct action or link to the correct location.
- Test whether the vote is correct with the questionnaires the respondents selected
- The program file includes various type of ASP.Net Validation Controls for example RequiredFieldValidator and RegularExpressionValidator.
- Test whether the send e-mail function can send e-mail to the appropriate receiver stating the correct information.

Online Survey System Debugging Strategies

Debugging is actually of finding and fixing the errors. There are several debugging strategies that applied in Online Survey such as:

- Built-in Error Detection

  Error will be discovered if a program is not performing well. ASP.NET has built-in error detection where an error message together with the lines number where the error occurred will be debugged. With this features, the debugging work becomes much easier and faster.

- Reviewing the Algorithm Used

  Reviewing algorithm and computations for the correctness and efficiency will help to discover logic error or database error. Usage of different algorithms will sometime increase the efficiency of the program.

- Display the Passing Value On Screen

  By displaying the passing value on screen, it helps to ensure that the correct value has been passed to the next program for processing.

- Check Success Status

  The success status is checked to determine whether to continue the process or exit from the program and display error message whenever there is failure in the previous process.

- Using Query Analyzer Provided by SQL Server 2000

  Query analyzer will helps to test the SQL statement and information about the error will be provided. Query Analyzer is also used to correct the SQL statement when wrong information is being retrieved.

7.3.2 Integration Testing

The purpose of the integration testing is to know whether the entire software is able to work as one program. It will also verify that each module will be able to function together. Integration testing concentrates on module interaction and the detection of interface errors. The design specification is referred for the purpose of verification and helps to test the software according to the dependencies present in particular module that being tested. For Online Survey integration testing, the system is viewed as a hierarchy of components, where each component belongs to a layer of design. The approach applied in testing the Online Survey system is referred as Top-Down Integration where integration will start at the highest level of main program or module or sub modules are gradually added until the bottom is reached.

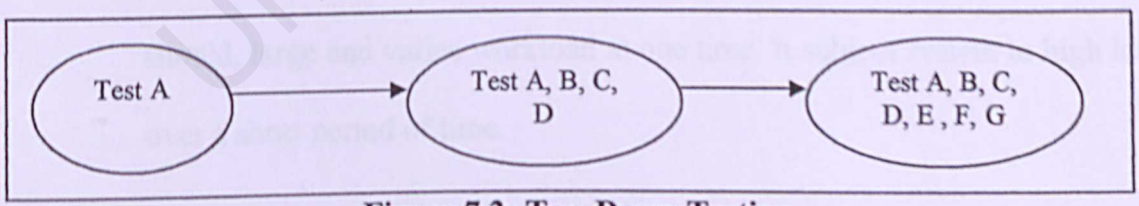


Figure 7.2: Top-Down Testing

7.3.3 System Testing

A system testing is a series of different test designed to fully exercise the system to uncover its limitation and to measure its capabilities. The objective is to test an integrated system and verify that it meets the specified requirements. Several steps were taken in testing Online Survey system such as function testing and performance testing.

Function Testing

System testing begins with function testing that focus completely on functionality. The system structure is being ignored. The testing is based on the system's functional requirements which are stated in the early chapter.

Performance Testing

Performance testing aims at testing the run-time performance. Response time of the event triggered was checked to verify the performance of the system.

a. Stress Testing

   The main purpose is to determine whether the system can handle, as it should, large and varies workload at one time. It subject system to high loads over a short period of time.

b. Security Testing

   The objective is to verify the protection mechanism such as dealing with improper penetration.

c. Human Factor Testing

In this testing, interface and message are being evaluated by many user to get the best interaction effects. It concentrates at the appearance and the interaction of the system. All aspect that may be related to ease of use, such as display screen, will be examined.

7.4 Test Cases

Test cases are developed to show that the input is properly converted to the desired output. They are used as some set of structural input is given and the output is observed. The test cases are design to perform unit testing till integration testing with the specific results. Repetitive testing is done on a single test case to prove the consistency of the results.

7.4.1 Unit Test Cases

Unit test cases aim to test an individual independent component. Below is an example of unit test case that being done for Online Survey.

Test Case	: 2
Module	: Administrator
Sub Module	: Delete questionnaires
Unit	: Questionnaire – Delete
Scenario	; To view and delete Questionnaire

No	Steps/Fields	Test Data	Expected Result	Test Result
1	Click" Delete Questionnaire" button.		System displays the list of questionnaires	Questionnaires displayed.
2	Click Remove button beside questionnaire		System delete the questionnaire	Questionnaire is deleted and displayed the rest of the questionnaires
3	Click Remove button beside questionnaire again		System delete the questionnaire	Questionnaire is deleted and displayed the rest of the questionnaires
Status : Pass Date : 2/2/2004				

Figure 7.3 : Unit Test Case

7.4.2 Integration Test Cases

Integration test cases involve more than one component. It usually tests for a sequence of flows and aims at verifying the interface between different components. Below is an example of integration test case for Online Survey system:

Test Case	: 1
Module	: Respondent
Sub Module	: Answer questionnaires and view result
Unit	: make sure the vote is successfully add into the result module
Scenario	: Respondent answers the questionnaires and views the result

No	Steps/Fields	Test Data	Expected Result	Test Result
1.	Enter the URL		System displays main page	Main page displayed
2	Click Survey button on main page navigation bar		System displays personal Info page	Personal Info Page displayed
3	Enter invalid email address	123.com	System prompt error message	Continual to the next is denied
4	Enter valid email	lihjen_2000@yahoo.com	System proceed	Questionnaires

	address		to next page	displayed
5	Click submit button		System displays result page	Result page displayed
6	Select the questionnaire		System displayed the result of the questionnaire	Result of the selected questionnaires displayed
Status : Pass Date : 2/1/2004				

Figure 7.4: Integration Test Case

7.5 Chapter Summary

Testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding. Unit, integration and system testing has been carried out for Online Survey System. At the end of the testing phase, the system should be able to perform the tasks required and free of some errors.

Chapter eight present the system evaluation which reveals the problem encountered and solution, system strength and system constraints, future enhancements, knowledge and experience gained.

CHAPTER 8 SYSTEM EVALUATION

Evaluation is the ultimate phase of developing a system and an important phase before delivery the system to the end user. System evaluation is implemented by more than simply comparing the information obtained with the information which is expected. It was related to user environment, attitudes, information priorities and several other concerns that are to be considered carefully before effectiveness can be concluded. At all phases of the system approaches, evaluation is a process that occurs continuously, drawing on a variety of sources and information.

8.1 Problem Encountered and Solution

The following are the major problems encountered from the beginning of the project through the end of the system development process.

8.1.1 Problems In Tools And Language Selection

There are many types of Web based system development tools available nowadays. Choosing the right tools and web programming language are important because the appropriate tools and language would help to develop the system in a more efficient way. The solution taken including seeking advice from supervisor, discussion with course mate and senior who develop similar system and also having some research and review on the efficiency various tools and language.

8.1.2 Lack of knowledge to the ASP.NET

Due to time constraint, the learning and developing process was done in parallel. Since there was no prior knowledge of programming in ASP.Net, there was an uncertainty on how to develop a web based system using ASP.Net. ASP.Net is actually a new programming language for me. Although having difficulty in the early stages, however choosing to program in ASP.Net proves to be a wise move as it is a very powerful technology to build a web based application. Problems were solved through research on related material online and referring to some reference books. Discussion with friends using similar technology also helps to solve some difficulties.

8.1.3 Difficulties in Designing User Interface

Problems that faced during the early stage of development are lack of knowledge and experience of the real system flow and layout of standard user interface. Therefore, it is difficult in designing the most appropriate logic and user interface. By referring to many web based system interface, it helps to design the user interface in a more presentable and attractive style.

8.1.4 Limited Knowledge about Title of the Survey

Limited knowledge about title of the survey causes difficulties in developing the system. Problem solved by searching the related information via internet.

8.2 System Strengths

The system strengths are described as follow:

8.2.1 Proper Identification And Authentication

The security procedures in the login code make sure that only authorized person(administrator) is allowed to enter the specific page.

8.2.2 Easy Survey Conduct Facility

Online Survey provides easy survey conduct facility. It is designed such a way that the respondent only need to answer the questions by just a few mouse click.

8.2.3 User Friendliness

As a web based system, Online Survey shows some of the advantages in term of its usability. Consistent user interface are available in this system. Online Survey provides a standard interface appearance through the whole system. Besides, it has friendly GUI where all type of button is well defined. This is to ensure that the user can easily use the system without any briefing or with minimal training.

8.2.4 Ease Of Getting Information and data

The system provides information and data collected from the respondents. Respondents can get the entire figure by just a few mouse clicks.

8.2.5 System Transparency

System transparency refers to the condition where the users do not need to know about the structure, where the database resides, its database management system and anything related to the system implementation. For instance, users do not need to know how to retrieve and insert records into database and how to update their information. All they need to do is to submit their answer required and then view the results.

8.2.6 Error checking

Online Survey provides error checking for the validation of the important required field and prompt user about the invalid input.

8.2.7 Web-site Content Management

Administrator is allowed to perform their task on-line, for example insert and delete the questionnaires.

8.3 System Constraints

The system constraints are described as below:

8.3.1 Limited Functionality

Frequency of voting is absence in the system. Respondents may vote more than once

8.3.2 Lack of control of the gender of the respondents

This survey is conducted purposely to view the response of the IT male toward their female colleague. However, there is a problem facing to check the respondents gender.

8.3.3. Result Is Not In Printer Friendly Format

As the result of the Online Survey is view using web browser and the interface is designed to be very colorful and user friendly, therefore, it is not very suitable to print the result.

8.4 Future Enhancement

Due to the limitation of this system, there are a few suggestions that may be useful to future enhancement of the Online Survey system. The suggestions are as below:

8.4.1 More Type of Questionnaires Added

More type of questionnaires should be added in order to make the system more attractive and result more reliable.

8.4.2 Provide Printer Friendly Result Format

This will format the result of Online Survey into a printer friendly format where the respondents can print the result for the respondents.

8.4.3 Integrated with other statistical software

Due to this is the online survey system, there is a lot data will be collected, in order to analysis the data in a systematic way, it is better to integrated the system with the statistical software like SPSS.

8.5 Knowledge And Experience Gained

Besides knowledge on technical aspects such as Windows XP Server, ASP.Net, VB.Net and SQL Server, there are also other valuable experiences gained from working on this project such as:

- Learn how to manage a project as in time and resource
- Being exposed to the real system development environment especially dealing with users
- Concept on how to integrate and fully utilize various technologies into developing system
- Experience on how to set up and configure various technologies to be able to serve as a live system.
- Learn to work independently
- Boost self-confidence, self-esteem and good communication skill during the discussion with the lecturer and viva session

- Cultivated skills in writing documentations and reports

8.6 Reviews on Goals

There should be certain expectation and objective achieved at the final stage of the project.

8.6.1 Expectation Achieved

The system had fulfilled the expectation stated at the early stage of the project. All the basic foundation of the system was being designed and implemented. Moreover, the end product met the criteria such as user friendliness, reliability, manageability, expandability and so on.

8.6.2 Objective Achieved

The system created had fulfilled all the requirements stated in the early chapter, therefore, the objectives to establish the application had been achieved.

8.7 Chapter Summary

As a conclusion, this project was succeeded in achieving the objectives of developing a web based Online Survey system.

Throughout the development of this project, a lot of precious knowledge on web based programming was gained. This included the configuration and management of Windows

XP Server and IIS, programming knowledge in ASP.Net and VB.Net as well as the techniques and concepts in implementing database (SQL Server). This project has been a very useful experience which exposes the idea of research work to the developer.

Appendix

APPENDIX A-Questionnaires

Questionnaires

Using the scale: 1 = strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = agree, 5 = strongly agree

Rank the following questions:

Male employees like to work with their female colleagues.

Male employees prefer to work with all-male colleagues.

Male employees prefer to have male bosses.

Male employees object to working under a female boss.

Female colleagues work confidently.

Female colleagues are usually very hardworking.

Female colleagues are very committed to their work.

Female colleagues are friendly.

Female colleagues are very responsible.

Female colleagues are always able to meet deadlines.

Female colleagues are resourceful.

Female colleagues always come out with good ideas.

Female colleagues are positive thinkers.

Female colleagues are quick to understand new concepts and ideas.

Female colleagues have good verbal communication skill.

Female colleagues have good oral communication skill.

Female colleagues deserve equal opportunity for promotion as the male employees.

Female colleagues are slow.

Female colleagues cannot work very well under pressure

Female colleagues waste a lot of time on gossips.

Female colleagues plan their career path.

Single women can work better than married women.

Female colleagues are slower learners than male colleagues.

IT is a suitable field for women to work in. These are the questionnaire that will be conduct during the online survey system. However that will be some amendments where necessary to improve the quality of the questions

Appendix B – User Manual

1. Introduction

Online Survey System is a web based system that conducts a survey on the perception of male to their female colleague in IT Field. The system will allow the respondents to answer the questionnaires regarding the title above mention. They also can view the result to the survey conducted by this survey. They can send their feedback and invite their friend to take part the survey. On the other hand, this system allows the administrator to add and delete the questionnaires in case there are new questionnaires. The administrator also can view the profile of the respondents and send the lastest information regarding the survey.

1.1 About This Manual

This user manual will guide you through all the function available in the system. This manual includes the following part such as:

- System Overview
- Hardware and Software Requirement
- User Module
- Administrator Module

2. Hardware & Software Requirements

2.1 Server Side Requirements

2.1.1 Hardware Requirements

Hardware requirements for the server computer are:

- PC with a Pentium (233 MHz or higher)
- At least 128 MB of RAM (256 MB is recommended)
- Hard disk space of 2.5 GB
- VGA or higher-resolution monitor, super VGA recommended
- Others standard computer peripheral

2.1.2 Software Requirements

The software required to be installed into the server computer are:

- Microsoft Windows XP
- Microsoft SQL Server 2000
- Microsoft Internet Information Server 5.0 with .NET framework
- Internet Explorer 6.0

2.2 Client Side Requirements

2.2.1 Hardware Requirements

The hardware requirements to execute the system are listed below:

- PC with a Pentium (133 MHz or higher)
- At least 64MB of RAM (128 MB is recommended)
- Hard disk space of 2.5 GB (recommended)
- A VGA or other compatible monitor display
- Others standard computer peripheral

2.2.2 Software Requirements

The software required to be installed into the client computer are:

- Any platforms and browser that suitable(Internet Explorer 5.5 is recommended for browser)

3. Getting Started

3.1 Setting up Online Survey Virtual Directory

1. Start **Windows Explorer** and create a new physical directory named survey, under the \Inetpub\wwwroot directory created by IIS on your hard drive.
2. Copy all the survey files to this directory
3. Then, click **Start,** point to **Control Panel**, point to **Performance and maintenance**, point to **Administrative Tools**, and then click **Internet Information Services**
4. Expand <**domain name**> by clicking +. Right click on **Default Web Site** and point to **New**, select **Virtual Directory**. You will see the splash screen of the **Virtual Directory Creation Wizards**. Click on [Next]
5. Type surveyt in the Alias text box; then click on [Next].
6. On the next screen, click [Browse] and select the directory **Inetpub/wwwroot/WebApplication3** that you have created in step 1. Then, click [Next].
7. Make sure that the **Read** and **Run** scripts checkboxes are checked, and that the **Execute** checkbox is empty. Click on [Next] and the click on [Finish].
8. The survey virtual directory will appear on the tree in the IIS Administration Windows
9. Right click on the survey Virtual Directory and select **Properties**.
10. You will notice that you have created an application called **WebApplication3** – the same as the virtual directory. If the box next to the application name is blank, you

need to hit the [Create] which will turn into [remove]. This is to enable us to use Global.asa in the script.

11. Check only the **Read** checkbox
12. Select the **Document tab**, click on [Add] and type in **main.aspx** and move the file to the highest in the list box
13. Check on [OK]
14. Exit **IIS**

3.2 Upload the project to the internet

1. Register a domain in the internet. The host of the webpage must support to ASP.NET and provides the SQL server
2. Normally, upload the web form to the internet is similar to the normal upload html file.
3. However, when upload the data to internet; you may require attaching your table to the database given or you can manually entry the data. The different web hosting may require different method.
4. Due to name of the database given may different with query written in the script, you may require to change the name of the database in the script accordingly. Besides, the name of the server may also different, so you also have to change the name of the server in the script
5. It seem to be problematic when uploading the database to the internet, however, most the web hosting will provide the user guide to the users.

User Module

This module contents the description of the user function, which are:

- Fill in the personal information
- Answer the questionnaires
- View the result of the survey
- Send the invitation o their friend
- Send the feedback to the administrator

Respondent Information Page

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Home

Respomdent Information(for contact only)

Respondent Name: (optional)

Email Address:

Submit

Figure3.1: Respondent Information

Respondent Information

1. The respondent information page will prompt before the respondents go to questionnaire page.
2. The respondents are required to fill their email address in order for corresponding and their names are optional.
3. Once they submit the information, their will be allowed to answer the questionnaire.
4. [Home] bring you back to online survey main page.
5.

Survey page

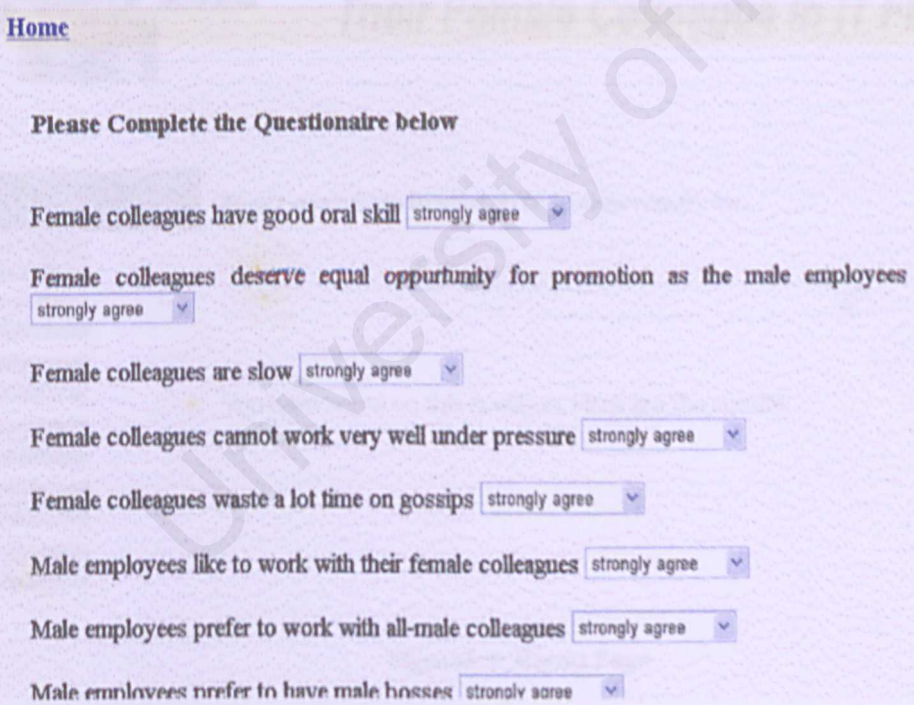

Figure3.2: Survey Page

Survey Page

1. After filling the personal information, the respondents will come to this page.

2. This page allows the respondents answer the questionnaire by the answer beside the questions.
3. The answers will be divided into five category, that are strongly agree, agree, slightly disagree, disagree and strongly disagree.
4. After answering the questionnaires, they are required to click the submit button.

Result Page

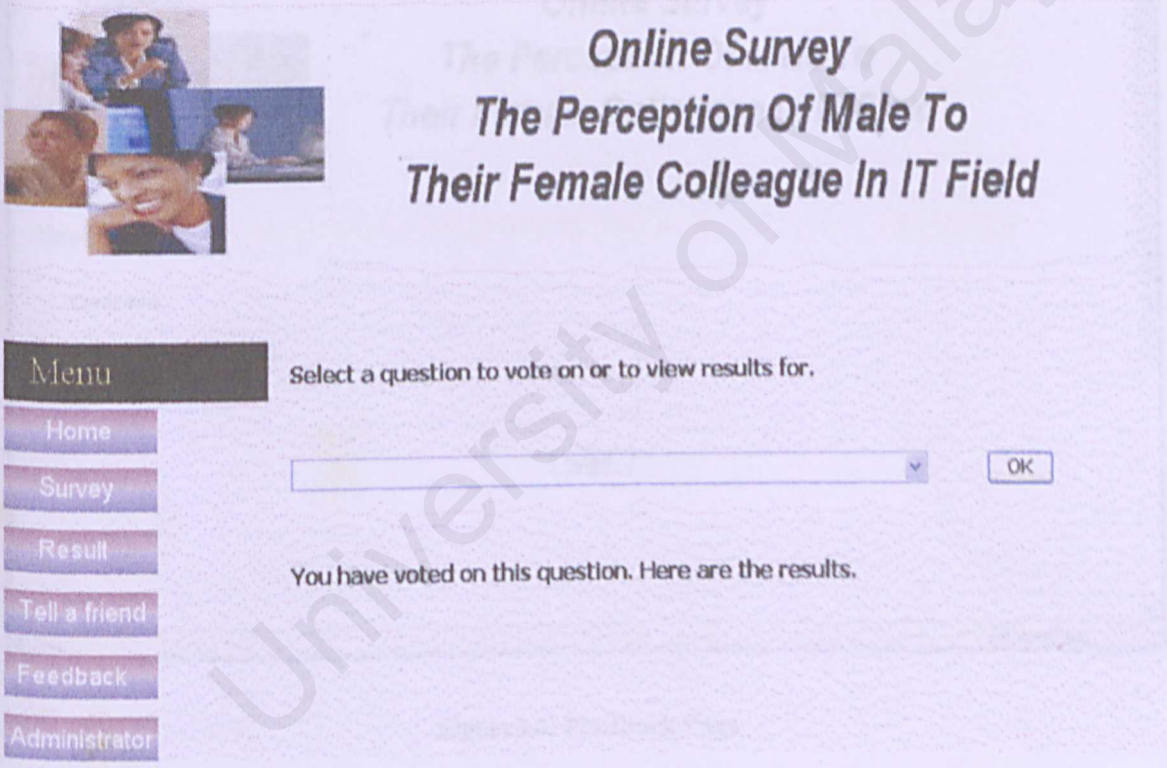

Figure3.3: Result Page

Result Page

1. After the respondents click the submit button, they will be prompt to the result page.

2. The respondents can choose the view the result of else by selecting the dropdown list.
3. The result will be shown below the dropdown list.

Feedback Page

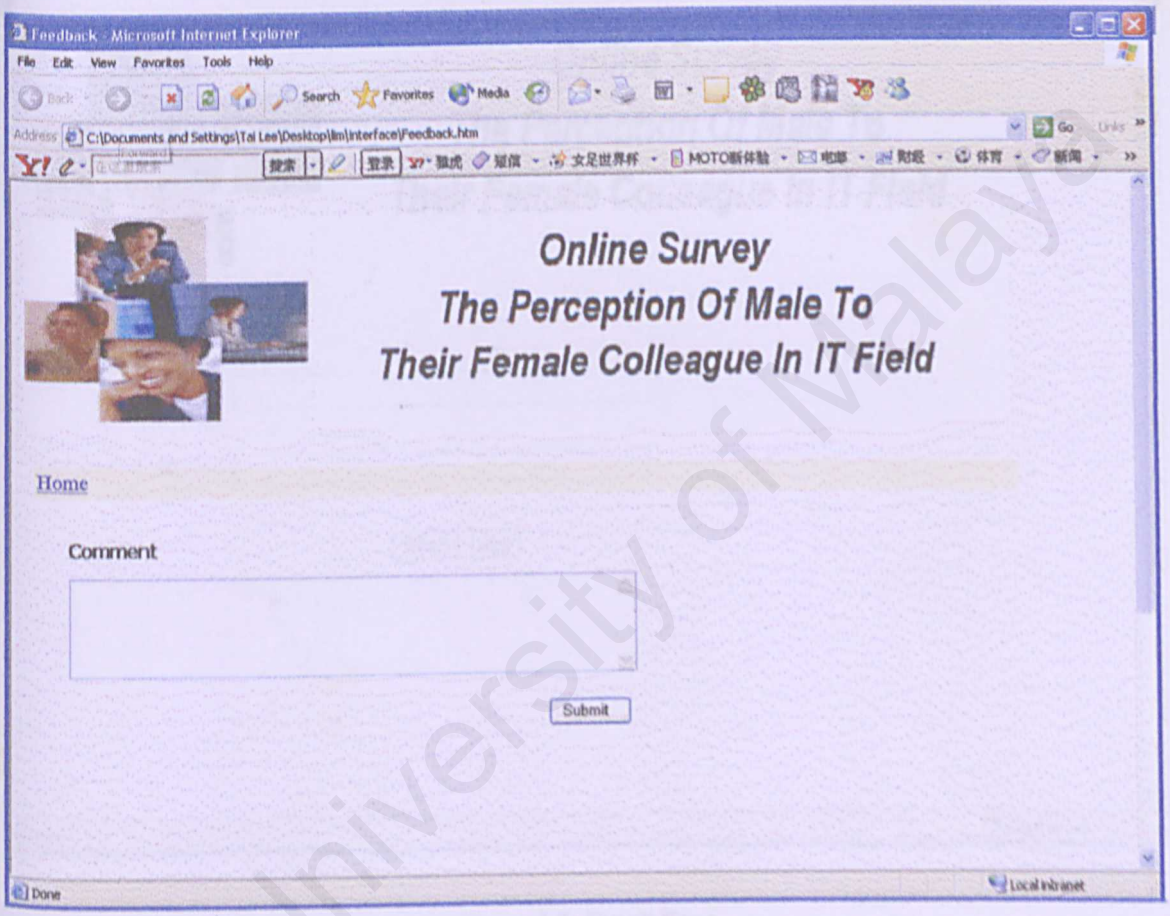

Figure3.4: Feedback Page

Feed back Page

1. This page allows respondents giving the comment to the administrator after their answering the questionnaire.

Email Page

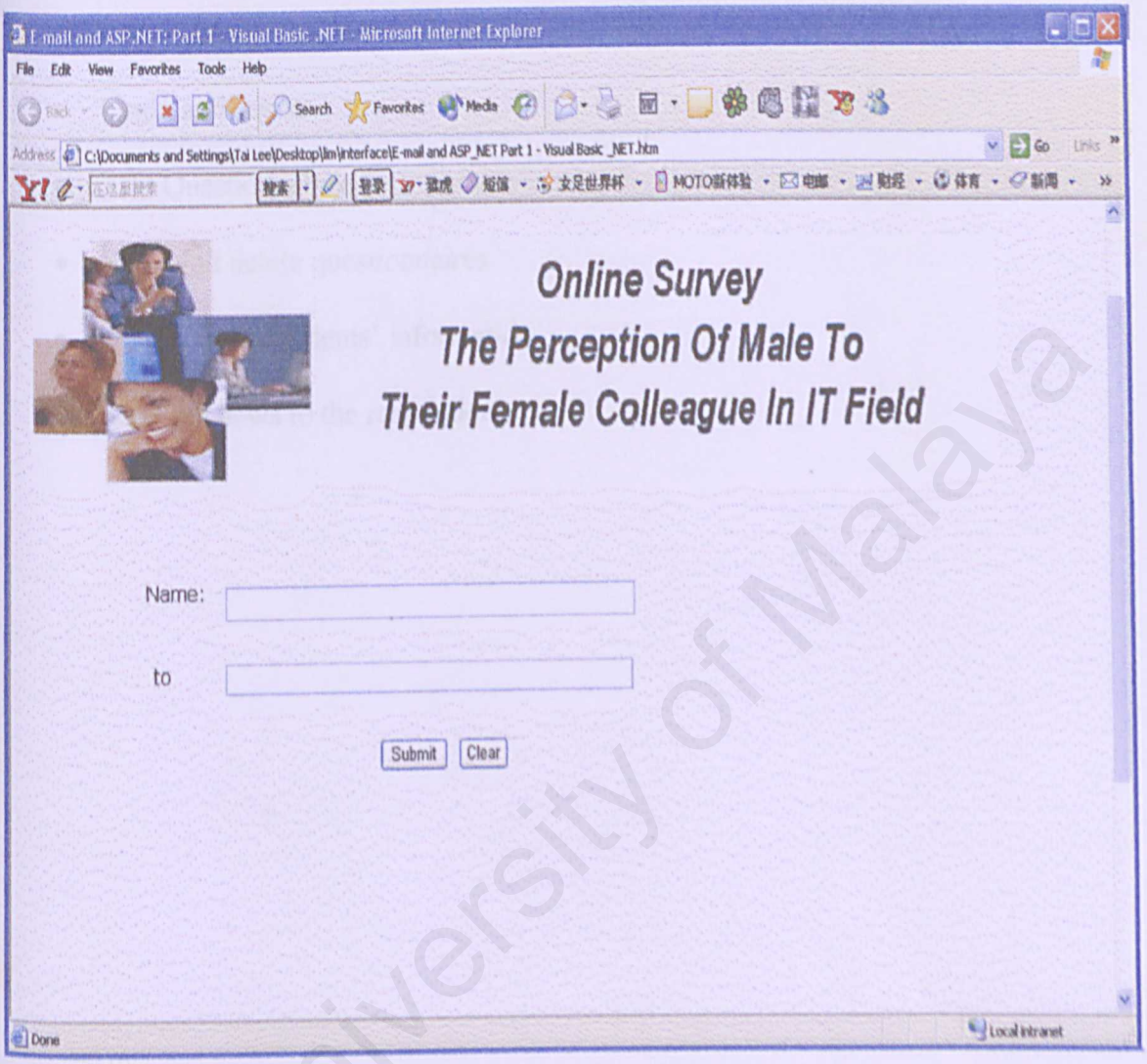

Figure3.5: Email Page

Email page

a. This page allows the respondent to invite their friend to take part in this survey by send the email to their friend.

Administrator Module

This module contents the description of the user function, which are:

- Login and logout
- Add Questionnaires
- View and delete questionnaires
- View the respondents' information
- Send the news to the respondents

Administrator login page

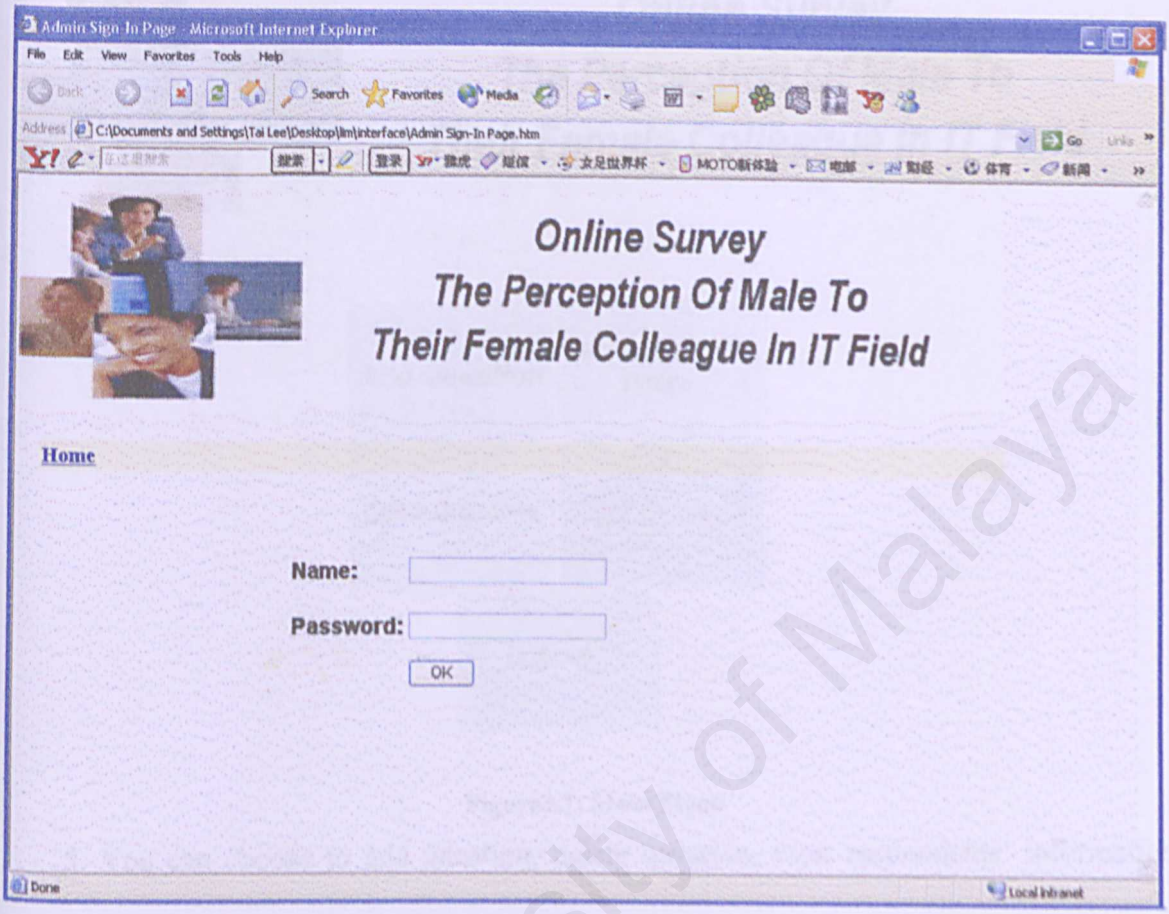

Figure3.6: Administrator login Page

Administrator login page

1. This page requires the administrator to type the name and the password correctly in order login the administrator main menu page
2. The error message will come out in case the name or the password is incorrect
3. Due to there is the only one administrator, if the administrator forget the password, the only way login to the system is contact the database administrator.
4. Once the login is successful, the administrator will be prompted to the main menu a show in figure.

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Add Question	View Respondent Profile
Delete Questions	View Comment
Logout	

Figure3.7: Main Menu

5. You can choose to add question, delete question, view respondents' information and view the comment of the respondents

Add Question Page

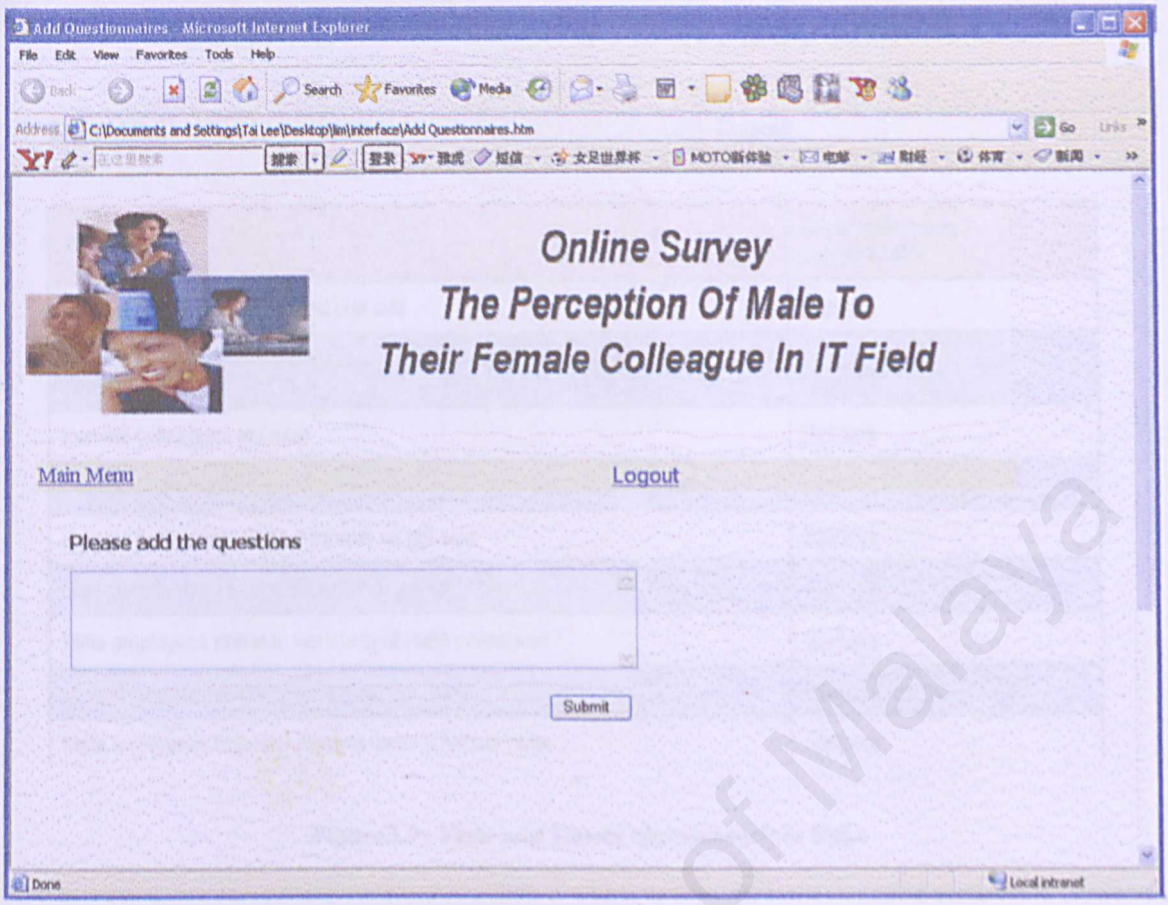

Figure3.8: Add Question Page

Add Question Page

1. You will able to add the questionnaires the system. Once you click the submit button, the questionnaires will stored in the database and will be shown in the survey page

View and Delete Questionnaires Page

Main Menu Logout

Questionaires	Click to Remove Questionaire
Female colleagues have good oral skill	Remove
Female colleagues deserve equal oppurtunity for promotion as the male employees	Remove
Female colleagues are slow	Remove
Female colleagues cannot work very well under pressure	Remove
Female colleagues waste a lot time on gossips	Remove
Male employees like to work with their female colleagues	Remove
Male employees prefer to work with all-male colleagues	Remove
Male employees prefer to have male bosses	Remove
Male employees object to working under a female boss	Remove

Figure3.9: View and Delete Questionnaires Page

View and Delete Questionnaires Page

1. You will able to view all the questionnaires in this page.
2. In order to remove the unwanted questionnaire, you only need to click on the remove beside the questionnaires. The questionnaires will be automatically deleted from the database.

Respondent's Information page

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Main Menu Logout

name	email
tan lei meng	lei@yahoo.com
< >	

Figure3.10: Respondent' Information Page

Respondent's Information page

1. You can view the respondents' name and their email address.
2. if there any latest news or information to be inform to the respondents, you can simply click on the email address beside the respondents' name that will prompt the email page that allow you to send the message.

Respondent's Comment Page

1. You can view the feedback from the respondents.

References

Access Tour.***http://www.microsoft.com/office/previous/access/2000Tour/default.asp.*** Last updated: August 5, 2003. Microsoft Corporation.

ADO.NET. ***http://msdn.microsoft.com.*** Last updated: August 1, 2003. Microsoft Corporation.

ADO.NET Pros and Cons. ***http://www.vbip.com.*** Last updated August 2, 2003. Oleg Gdalevich

Ashton H. (1997). Teach yourself database programming with JDBC in 21 days (1st ed.).Indiana: Sams Publishing.

Binkend, L.C., &Moore, D.M.(2002).Women/minorities in Computer Science: Where are they? No Attention No Retention: ***The Journal of Computing in Small] Colleges,*** *17*, 8-12.

Chaudlhury,A. & Kuilboer,J-P.(2002).***e-Business and e-Commerce_Infrastructure*** NY:Mcgraw-Hill.

Client/ server Software Architecture –An Overview. ***http://www.sei.cmu.edu/str /descripttions/clientserver.html.*** Last updated: July 25 2003.

Deitel, H.M., Deitel,P.J.&Neito.T.R(2002).***_Internet & World Wide Web How to Program.***_New Jersey: Prentice Hall,Inc.

Hellens, L.A.V., Nielsen, S.H. & Trauth, E.M.(2001).***Breaking and Entering the Male Domain Women in the Industry. Proceedings of the 2001 ACM SIGCPR conference on Computer personnel research***. New York: ACM Press.

Introduction To OMG's Unified Modeling Language.*http://www.omg.org/gettingstarted /what_is_uml.htm.* Last Updated July 16 2003. Object Management Group.

Java Script overview. ***http://devedge.nestscape.com.*** Last updated: July 8, 2003. Netscape communication Corporation.

Kendall, K.E. and Kendall, J.E. (1999) ***System analysis and design*** **(4th Ed.)**. United States of America: Prentice Hall.

Microsoft 2000 Server Overview. ***http://www.microsoft.com/windows2000/server/ evaluation/business/overview/default.asp***.Last updated : July 18 2003. Microsoft Corporation.

Microsoft Windows 2000 Professional Overview. ***http://www.microsoft.com/windows20 00/professional/evaluation/business/overview/default.asp***.Last updated: July 18 2003. Microsoft Corporation.

Microsoft Windows XP Professional Overview. ***http://www.microsoft.com/windowsxp /pro/evaluation/whyupgrade/top10.asp.***.Last updated: July 18 2003. Microsoft Corporation.

Pfleeger, S. L. (2001) *Software engineering: theory and practice* (2nd Ed.). New Jersey: Prentice Hall.

Prototyping model. ***http://searchvb.techtarget.com.*** Last updated: July 19, 2003. TechTarget

Schneider G. P. & Perry J. T. (2000). ***Electronic commerce.*** Canada: Course Technology.

Sellappan, P. (1999). ***Access 2000 (1st Ed.).*** Selangor: Federal Publication.

Sommerville, I. (2001). ***Software engineering (6th Ed.).*** United State: Addison Wesley

SQL Server 2000 Product Overview. ***http://www.microsoft.com/sql/evaluation /overview/Default.asp.*** Last updated: July 9, 2003. Microsoft Corporation.

What is Linux. ***http://www.linux.org/info/index.html.*** Last updated: July 18 2003. Linux Online Inc..

Why ASP.NET. ***http://asp.net/whitepaper/whyaspnet.*** Last updated: July 8, 2003. Microsoft Corporation.

Bibliography

Deitel, H.M., Deitel,P.J.&Neito.T.R.(2002). ***Internet & World Wide Web How to Program.*** New Jersey: Prentice Hall,Inc.

Kendall, K.E. and Kendall, J.E. (1999). ***System analysis and design*** **(4th Ed.)**. United States of America: Prentice Hall.

Pfleeger, S. L. (2001). ***Software engineering: theory and practice*** (2nd Ed.) New Jersey: Prentice Hall.

Sellappan, P. (1999). ***Access 2000 (1st Ed.).*** Selangor: Federal Publication.

Sommerville, I. (2001). ***Software engineering (6th Ed.).*** United State: Addison Wesley